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EDITORIAL POLICY

On November 19, 1959, the Executive Committee of the Southern Economic Association adopted the following editorial policy for the *Southern Economic Journal:*

(1) The quality of scholarship shall continue to be the sole criterion of selection for publication. Hence, preference shall be given to Southern authors and to articles on the Southern economy only on the basis of the principle of "other things being equal" in matters of quality.

(2) To be acceptable for publication, manuscripts shall be analytical in approach no matter whether they are empirical, statistical, historical, or purely theoretical.

FRITZ MACHLUP, *President*
Southern Economic Association

The SOUTHERN ECONOMIC JOURNAL

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A BEHAVIORAL APPROACH TO THE BUSINESS ENTERPRISE*

HAROLD L. JOHNSON

Emory University

PRELIMINARIES

As many economists have argued, developments in theory often originate out of institutional evolution or public debate concerning the problems of a particular point in history. In mid-twentieth century America, one of the several topics which has fostered much theoretical discussion is the business organization, for it is becoming increasingly apparent that only with considerable manipulation, if then, do existing tools of analysis offer a sufficiently reliable sketch of business behavior. The ferment in theory centering around the business enterprise is illustrated by such diverse developments as mathematical programming applied to the firm, by efforts to erect a science of administration, and by the growing contributions to organization theory.

The accepted theory of the firm with its emphasis upon the incremental weighing of revenues versus costs toward the end of maximizing profits, while useful for many purposes, has had but modest predictive success in handling some aspects of contemporary business practice. Corporate philanthropy to liberal arts colleges, extensive fringe benefits to employees, the high wage policies of many establishments, extensive community relations programs, and the rather extraordinary humanization of the work environment are activities which can be translated neatly into the calculus of profits only if the time span of the entrepreneur is stretched to eternity and if business firms have employed omniscient clairvoyants.

Of course, while models are sometimes complemented, expanded or altered because of predictive shortcomings, they are not indicted as defective simply because of confinement to limited purpose. This is an inevitable feature of all conceptualizations of phenonema. Each analytical tool, as a given tool in a plumber's chest, has somewhat limited purposes and uses. The traditional view of the enterprise was not designed primarily to portray the actual decision making processes of the firm. It serves as an integral part of an extended theoretical structure describing the budgeting of scarce resources among multitudinous wants and desires in society. Thus by indicating a need for complementary conceptions of the modern enterprise, the traditional theory is not relegated to a trash heap of obsolete constructions.

In social science the investigator probes at a whole, at a reality which is of a single seam rather than at an object divided into separate compartments. This complex whole of human behavior, however, must be approached from particular perspectives or with specific, narrowed models erected out of the interaction between observer and reality. The whole simply cannot be viewed in any other way. Particular stances or perspectives reveal particular dimensions of the whole adding to knowledge, though clearly no single stance or model encompasses all of the complexities of human behavior. Thus different models describe the same empirical situation, these models both contradicting and complementing each other in their portrayal of the same object.

The relationship between a behavioral conception and the traditional theory of the firm is somewhat comparable to that between the views of the electron as a wave and as a particle in the physical sciences. Both views are abstractions, each necessary for certain purposes but *both* required for a more complete understanding of the electron. With this approach to the basic nature of theorizing, the error of psuedo-simplicity is

* The study resulting in this paper was carried out during the Ford Foundation seminar on the theory of the firm held at the University of Michigan in 1958 under the direction of Kenneth Boulding. The author wishes to express his gratitude to Kenneth Boulding, W. Allen Spivey, and the editors of the *Journal* for their several helpful suggestions. The author is responsible of course for errors that remain.

avoided wherein it is stated that if one model is useful or "true" others are thereby "false" or unnecessary. In view of the great diversity of business behavior, "both-and" rather than "either-or" appears to be the most valid conception of theory construction.

A BEHAVIORAL VIEW OF THE ENTERPRISE

The business enterprise is a complex reality partly because it is a social system existing within an environment with many different yet intricately interrelated facets or spaces. The picture of the business organization as part of a vast ecological system is a useful one, for it directs analysis toward the action and reaction of the firm within many constraints or limits. The firm operating in a given setting which confines variation or action, of course, is part of the traditional analysis, though conventional theory concentrates largely upon the interaction of the unit with the physical or technological dimension via production functions and with the purely economic dimension through cost and demand functions. Economists are aware that the enterprise also is constrained in some respects *and freed* in others by a legal framework of law and regulation.

It is perhaps less apparent to economists that the enterprise is bounded by additional "production-possibility" frontiers separating what can be done from what cannot. One such fence within which the firm operates is a socio-cultural setting which circumscribes, frees, and coordinates business action. Every society has shared orientations concerning knowledge, values or goals, and norms which regulate not only values sought but the choice or selection of means to those goals. These shared orientations are part of the situation influencing business behavior, and to understand commercial practice more fully the theory of the firm must include a conceptual structure which describes the impact of socio-cultural variables upon the enterprise. To indicate the direction of this study, the socio-cultural setting of business practice is its raw material.

With an emphasis upon aspects of the enterprise not often elaborated in the conventional statement, a behavioral model must be classified in the category of a non-Euclidean economics, to use a phrase coined by J. M. Clark many years ago. The materials and general propositions of this paper, however, have a long history, extending back at least to Adam Smith! Alfred Marshall in his *Principles* states that the businessman carries to his transactions not only an interest in material rewards but also conceptions of duty and reverence for high ideals. Marshall, moreover, has written on the provocative topic of the "Social Possibilities of Economic Chivalry."[1] John R. Commons in his description of economic theory suggests that it includes not only discussion of implications of scarcity and mechanism but also examination of the mutual impact of social rules and economic activity. Part of his work in the *Legal Foundations of Capitalism* serves as an example of the latter phase of economic theory. Economists writing more recently on the influence of the socio-cultural setting on economic phenomena include such figures as J. M. Clark, Neil Chamberlain, Howard Bowen, Kenneth Boulding, Talcott Parsons, and Andreas Papandreau. To indicate further the antecedents of the paper, a behavioral conception of the enterprise bears considerable family resemblance to the work in organization theory of Herbert Simon and Chester Barnard. The theoretical contributions of social psychology and sociology also are evident in the following analysis.

A. *The Normative Aspect of Human Behavior*[2]

Social relationships, the interaction of individuals in a social situation, reflect both the "grandeur" and the "misery" of human action. Without these relationships man has no self or personality, yet because of these interactions man is controlled and directed into particular ways of thinking and behaving. While the individual carries with him a physiological and genetic baggage which influences activities, the factor which distinguishes man from beast is

[1] Alfred Marshall, "Social Possibilities of Economic Chivalry," reprinted in *Memorials of Alfred Marshall* edited by A. C. Pigou (London: Macmillan, 1925), pp. 323–346.

[2] At the outset of this section it is important to note that only individuals are prompted to behave in certain ways by norms, attitudes, and values. Organizations are not possessed of super-minds or of motivations. Concepts such as the firm, business organization, or corporation thus are categories of thought which represent particular individual behavior sequences. When these group constructions are utilized they are shorthand ways of discussing complex patterns of individual behavior manifested in social groups.

his "self," a reasonably coherent organization of attitudes, conceptions, and values concerning physical and social reality including one's self. The development of self arises out of the interrelationships into which the newly-born child is thrust, with the family, peer group, school, church, and mass media as significant agencies socializing the individual.

The expansion of self through the processes of socialization can be conceived of as steady outward shifts in the "production possibility" or opportunity lines which describe what a person can or cannot do. Individuals separated from the influences of family and other human communication are literally subhuman in character without many of the features we associate with human beings. Their opportunity frontiers restrict them virtually to an animal existence.

The flow of communication between the individual and others out of which the self emerges relates both to a factual and to a normative order. Individuals develop knowledge of a positive nature setting out what is from what is not concerning the complex reality in which they exist, that is a knowledge about items which can be indicated as true or false. Because they are responsive to the judgments of others, they take up a pattern of attitudes concerning themselves, others, and the factual order. In the terminology of sociology, a normative frame is internalized in varying degrees into the thought processes of individuals, put at the level of the individual conscience. These mores or norms or group standards giving an ethical dimension to life indicate a group consensus of what should or should not be done in particular situations. They are the prevailing attitudes, beliefs, or standards of a group at a particular time and place as to what should be done—accepted and expected ways of behavior of society in a capacity as regulators of action. As a word of caution, the terms norm, mores or even the word moral derived from mores, are purely neutral concepts to describe an aspect of human behavior. The norms may be those of a juvenile gang, church, tribe of head-hunters, or the mores of a factory in America. Norms take on an empirical meaning when what actually is expected in a particular social context becomes known to the observer. With a knowledge of the normative patterns of a group the possibilities of prediction are apparent, for the actions of at least the modal class can be anticipated.

There are, of course, norms concerning business action. Many businessmen seek to "give people their money's worth," partially because competition forces them to, but also because the customs and norms of America suggest that to be proper commercial practice. One way to depict the articulation of competition and social norms is to characterize the interaction of enterprises as competition within a particular normative matrix or network. The businessman can strive with rivals but norms and laws associated with business prevent him from bombing his competitors, running them down with automobiles, or from enticing customers into his establishment with the promise of free opium. The businessman has considerable freedom of action in the techniques of rivalry to be certain, but the norms of society constrain behavior within particular albeit shifting limits.

The normative patterns, besides forming a context in which economic affairs take place, are similar in some respects to the pressures of the market in their basic impacts upon behavior. Both norms and the competitive market are unconscious coordinators of action, for example, guiding decisions subtly yet forcibly into certain avenues. The coordination promptings of mores may be even more coercive than the signals of the market, for with norms at the level of conscience alternative courses of action may not even be conceived or formulated. Both are categories of social control of the "invisible hand" variety, informal yet often compelling. The close connections between the market and the normative dimensions of society are apparent, furthermore, in the crucial dependence of the market upon a whole array of attitudes, beliefs, and institutions essential to facilitate the operation of the mechanism. Social scientists no longer depend (if they ever did) simply upon the "propensity to truck and barter" to explain the existence of a market economy but upon a complex set of socio-cultural circumstances.

As another point of similarity between these arrangements of social control, both in reality are incomplete or imperfect in their transformation of private into public interests. The competitive market and the normative order as elaborated by scholars are models or constructed

types. Most individuals are "genuine adherents"[8] to some of the normative complexes of their culture but not to all. Individuals are expedient adherents of many mores, that is, followers of the rule because of the threats not of conscience but of law or public disapproval. Actual social control stemming from norms thus is imperfect or partial.

To play upon the genuine-expedient distinction a moment further, when social indoctrination has made genuine adherents out of businessmen to a given code of conduct, the restraints arising out of the cultural environment are to be found in the preference maps of the individual. If businessmen are expedient adherents to the norms, however, the norms are opportunity lines which check behavior. In the terminology of linear programming, norms are part of the linear form to be maximized with the genuine adherent, while they are part of the constraining inequalities with the expedient adherent.

Turning to the vocabulary of game theory to indicate the linkage of a behavioral perspective with that model of behavior, the normative circumstances in which the business game takes place affects the size and character of the payoffs in the game matrix or the range of possible alternatives available to the players. Most business strategists do not select the course of blowing up their rivals with a well placed charge of dynamite because the sanctions, i.e., negative payoffs, associated with this course are so severe. In the case of genuine adherents to the values of Western life, such an alternative may not even be included within the game matrix. These individuals because of the psychological constraints laid upon them by particular norms may not even conceive of this as a strategy. Expedient adherents, however, choose other alternatives primarily because the heavy sanctions of public disapproval and the hangman's noose await them as payoffs for such a strategy! Though to interject another comment of caution at this point, it is necessary to remember that the genuine-expedient dualism is a neutral tool, the words genuine and expedient indicating only the quality of attachment to the norms. Judgements are levied primarily at the content of a normative set rather than at the degree of acceptance of a given set of norms.

The preceding perspective of human action may conjure up visions of Orwell's *1984* or of "brainwashing," but this criticism can be countered partially with a recall of statements made earlier. Social relationships are the prison of the individual yet are also his salvation, for without the social communications network in which he exists he could not be human. A simple determinism of social relationships "causing" self has not been outlined; rather an abstraction of an aspect of human action has been erected, focusing on but one dimension of human behavior. The examination of the normative order tells an important part of the story but not the whole.

B. *Business and Social Values*

To carry the analysis further, the norms of society are not amorphous but have an ordered structure which can be conceived of as a hierarchical value pyramid. The basic mores of a community in the upper reaches of the structure can be called the value system of that community. To express the matter somewhat differently, the totality of norms make up an intricate means-end continuum or series in which norms are ends-in-view but also are means to other norms in different positions in the value continuum. The goals near the end of the continuum make up the value system or structure of the society involved. The latter structure, or the goals near the apex of the value pyramid, are a determinable set of basic values which to a considerable degree are internalized into the thought processes of community members, serving as criteria by which activities are judged and evaluated. The judgement of behavior with these value measures is carried out not only by the actor in question but also by fellow citizens of the group.

Business practice, as all human activity, takes place within the framework of a specific value structure which helps give direction and meaning to the role and responsibilities of the businessman. Value systems may vary from society to society but the goal orientations of each society influence commercial undertakings found in each setting. Students of growth in economically underdeveloped countries are well aware that business does not take place in a social vacuum. Max Weber and R. H. Tawney have demonstrated vividly in their analyses of religion

[8] Robert Cooley Angell, in his recent book *Free Society and Moral Crisis* (Ann Arbor, Mich.: University of Michigan Press, 1958), introduces and uses in analysis the genuine-expedient adherent distinction. See pp. 43–44, 61, 81.

and economic order the influence of value ultimates upon business behavior.

With an emphasis in this paper upon the enterprise in the United States, inquiry must be made concerning the content of the American value system. Commentators on the American scene from DeTocqueville to the writer of the comic strip Orphan Annie have volunteered statements on American values, but for our purposes the listings of Robin Williams, a sociologist, and Howard Bowen will be satisfactory. Williams, in examination of what he calls the major value-orientations of American culture, includes: achievement and success; activity and work; moral orientation; equality; freedom; external conformity; science and secular rationality; nationalism-patriotism; democracy; individual personality; racism and related group-superiority themes.[4] Howard Bowen has characterized the following as the socio-economic goals of the American economy: high standard of living, economic progress, economic stability, personal security, order, justice, freedom, development of the individual person, community improvement, national security, and personal integrity.[5] While Bowen in his description of socio-economic goals discusses something somewhat different from basic value orientations, his classification embraces items which undoubtedly coincide with particular values or ends-in-view. The desire for freedom, development of the individual person, order, and justice are categories which fall under the Williams statement.

Economists appraising social values can advise their colleagues in sociology that values include both conflicting and complementary "goods." Material comfort may be a consequence of activity and work, but equality may compete with freedom or a higher standard of living. A survey of values with the analytical tools of economics extends to the rather obvious proposition that rarely do societies or individuals give up all of one value in exchange for another. Marginal increments of one end-in-view are traded for bits and pieces of another. Just as consumers in seeking to maximize satisfactions weigh relative utilities and costs to purchase an intricately balanced bundle of commodities, so societies move in the direction of a similar marginal evaluation.

One way to express the relationship between social goals and business behavior is in the familiar terms of demand and supply. The ends-in-view, which are part of the basic norms of society and which are incorporated in varying degrees into the thinking of society's members, bring about a "demand" for practices which will more or less satisfy these values. Thus the firm confronted with the task of transforming a flow of inputs into a product which has a market at costs consistent with a profit carries out this endeavor within a particular value situation. Parallel to traditional market demands for the products of enterprise exist demands for many social "goods," the "goods" which are reflected in the values of the community. Moreover, as establishments which do not move expeditiously to meet market pressures may find themselves bankrupt, so firms which do not supply the demand for such varied norms as pleasant work relationships, cognizance of business impacts on community life, and a minimum amount of honesty in customer relations may be confronted by a similar bankruptcy.

The influence of value demands upon business is felt to a considerable extent in association with the market mechanism in the difficulties of maintaining an effective labor force or a flow of customers and supplies to the firm. The normative order is manifest also, however, in the pulls of countervailing groups and government action. Following the general motif or theme of this paper, the sanctions for failure to adjust behavior to social values are additionally at the level of conscience. Businessmen as part of the American community are not exempt from internalization of values, so that undoubtedly the modal firm renders "service with a smile" partly as a means of differentiating product but also because individuals in the enterprise regard pleasant personal relationships as important in themselves.

This discussion of social values may have certain intriguing aspects, but the goals of personal integrity, justice, or freedom may provide such vague and general criteria as to escape an operational or explicit statement. In partial answer to this criticism, an intermediate set of instructions is available to the businessman which lends some precision to social ends in the

[4] Robin Williams, Jr., *American Society: A Sociological Interpretation* (New York: Alfred A. Knopf, 1951), pp. 388–442.

[5] Howard R. Bowen, *Social Responsibilities of the Businessman* (New York: Harper & Bros., 1953), pp. 8–12.

actual circumstances of decision making. These instructions are found in the role structure of society. From a behavioral perspective, individuals operate within a multiplicity of positions in social relationships, positions or statuses stemming from their family, sex, occupational, age, cultural, or income locations in the community. Each position has associated with it a certain minimum array of rights and obligations expected of persons participating in that position. The expected rights and duties form a recipe of action for individuals in a particular setting, portraying what should be done and how it should be done. These normative patterns are called the role linked with the applicable position or status, the role requirements concentrating the cultural norms or values at the level of specific activities. Or in slightly different terms, the value system serves as a broad framework of appraisal for the more definite role maps of action available to each position incumbent.

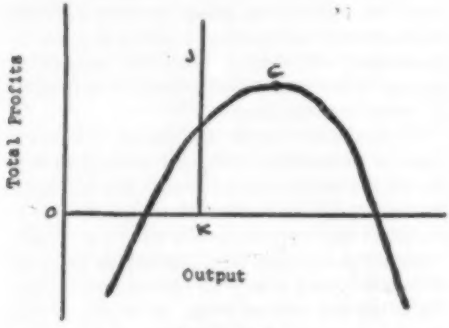

DIAGRAM 1

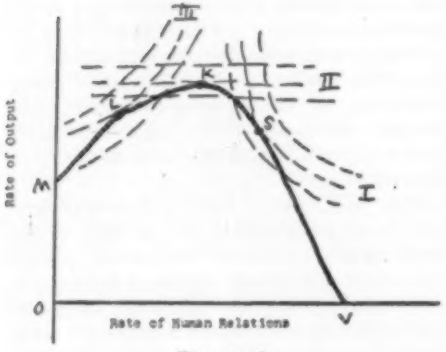

DIAGRAM 2

The social values given in the Williams statement such as humanitarian mores, equality, freedom, and individual personality and the Bowen categories of justice, development of the individual person, and personal integrity are given rather distinctive content by certain norms associated with the business role. These norms are indicated by the widespread shift to "human relations" in industry, by the values of non-arbitrary and considerate employee policies to the precise point of giving ample notice of transfer of employees to other cities. There is considerable evidence indeed that the business role includes the details of making available accurate information to employees concerning wage policy, grievance procedures, company operations and finances.

Returning to an earlier refrain, however, the economist perhaps has the peculiar outlook which leads to the rather transparent advice that norms carried too far become "discommodities" or negatives rather than gains. Too much of a virtue becomes a vice. Value achievements may carry heavy costs in terms of other values and ends foregone by the grasp of these norms. The principal activity of the firm, furthermore, as part of the economic order is the efficient production of desired goods and services. But to complicate such a neat and simple picture, this production inevitably takes place within a life space for the enterprise which includes additional social values.

C. *A Graphic Treatment of a Behavioral View*

The materials of a behavioral perspective display a continuity with the main body of firm theory, for these materials can be treated analytically or diagrammatically in a rough fashion with existing techniques. For example, the standard boundary maximum graph shown in Diagram 1 notes that the imposition of restraints such as law or norms represented by the vertical line JK results in a maximum position at a point other than G where MR equals MC. The legal or normative fence confines activity to points within the OK range of output. The decisions of the firm thus are a compound of interest in profits and the impact of constraints on enterprise.

In addition, the relationship between social values and their connection with business decisions can be shown in a familiar manner with

the juxtaposition of transformation and preference pattern curves. Diagram 2 depicts with transformation line MLKSV a relationship between the variables of output and humanization of industry which is reasonably realistic. The problem of quantifying the humanization of industry factor is one that can be ignored for the purposes of this discussion. It is sufficient to note that through the range of MK improving human relations may be accompanied by advances in output. Beginning the possibility curve at point M rather than the point of origin indicates that even in slave labor camps with beastly human relations some positive amounts of output would take place. At point V, on the other hand, the enterprise might be an extremely chummy, friendly family kind of business but would also be one which produced zero goods and services.

If the value orientations of the enterprise are such that both output and "good" human relations are desirables, as reflected in the negatively sloped indifference curves I, the optimum position is at S, the point where such a curve is tangent to the possibility line. If the establishment is largely unconcerned about human relations, shown with preference curves II, its best position is at K where output is at a maximum. However, if human relations are an undesirable or negative value as with a Scrooge, denoted by indifference curves III, then the solution is at some point between M and K such as L. Given the contemporary values of American life, with both output and human relations as important goals, the optimum position for most enterprises is very likely in the area of S, at output levels other than the maximum flow of product. This graphic treatment joined with a behavioral model suggests that the businessman with a variety of ends-in-view does not maximize a particular value such as output or profits but maximizes a blend of such values as profits, public reputation, pleasant human relations, and good conscience, all subsumed under a general category of optimum satisfaction.

The multi-dimensional environment within which the business enterprise operates can also be shown graphically with a Venn diagram, an elementary graphic technique of set theory. The firm is conceived as operating in an aggregate setting represented by the overlapping circles shown in Diagram 3. Each circle separating the possible from the impossible depicts a particular space or dimension of the aggregate setting, each circle portraying a set of behavior alternatives available to the firm. Additional sets can be introduced readily to the diagram with the division of the normatively possible category into norms at the level of self as with the genuine adherent and norms at the point of external constraints as with the expedient adherent. Operation beyond each circle brings with it sanctions of some variety—bankruptcy, prison, fines, physical injury, "pangs of conscience," or the ill-will of others. Each set of behavior alternatives has associated with it a particular distribution of sanctions. Action outside the boundary labeled economically possible, for example, means financial bankruptcy, while practices outside the set of normatively possible behavior alternatives may mean, if not bankruptcy, the antagonism and pressures of countervailing groups or private conscience.

The boundaries of environment for the enterprise in reality, of course, are much less certain and clear than Diagram 3 indicates. Real life restrictions are shaded areas rather than neat, sharp curves, and have the additional com-

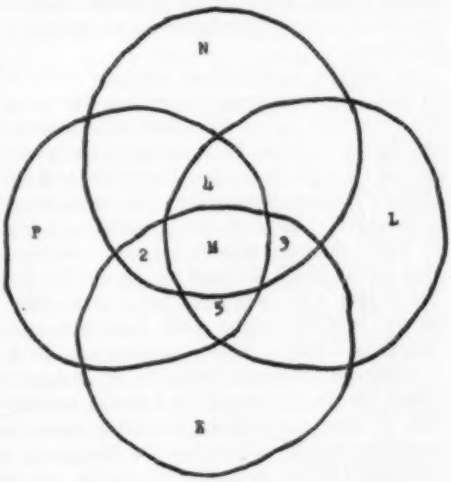

DIAGRAM 3

E circle depicts economically possible alternatives.
L circle depicts legally possible alternatives.
N circle depicts normatively possible alternatives.
P circle depicts physically possible alternatives.

plicating characteristic of changing position over time. With changing technology, markets, legislation, and values the total constellation of behavior alternatives expands or contracts. Furthermore, the images which individual businessmen possess of these life spaces differ, though a basic proposition of a behavioral conception is that with the processes of socialization there is considerable consensus concerning the action alternatives available to people. Each society or age tends to develop a modal personality type through which there is general agreement concerning practices and attitudes. The entrepreneur, however, by definition, is a person who sees interacting environments or locations of boundaries, economic, legal, physical, or normative, differently from the common herd of his contemporaries.

The enterprise as part of such a multi-dimensional environment tends to operate within the area marked M, in the intersection of the various behavior sets sketched in the diagram. The sanctions involved with selection of alternatives beyond those indicated by the respective behavior sets encourage activity within the intersection area of the diagram. As an aside, enomomists are prone to stress the vigor of economic sanctions as stronger fences than the ill-will of others, though other social scientists contend that the pressure of norms should not be underestimated.

An exercise in classifying behavior which is in partially overlapping sectors but not in M can be carried out to strengthen understanding of Diagram 3. Subset 2 may be illustrated by the sale of alcoholic beverages during the prohibition era in violation only of the 18th amendment, while subset 3 involves such ventures as a trip to Mars. Subset 5 reflects numerous incidents such as the MKT Railroad uproar of 1957 and the Nashua mill closure of 1948 in which companies pursued policies quite legal but most unpopular.[8] Actions within sector 4 may be illustrated by employee fringe benefit programs which are simply beyond the financial capabilities of some enterprises. Advancing economic capacities can be conveyed in the diagram by a widening of the economically possible set of actions suggesting that with more wealth an economy is able to furnish growing output and growing value achievement—safe factories, clean cities and a rising flow of goods and services.

This graphic statement can be made more complete with the inclusion of a difference between alternatives which actually exist and the alternatives as individuals conceive them. The question also remains of which course in area M is to be selected. If the individual businessman is made in the image of Herbert Simon's "administrative man," his selection may differ from that of a maximizing person. The "administrative man" as a "satisficing" being, a being interested in picking simply any alternative within a feasible or satisfactory set, would select any of the M alternatives regarding it as "good enough." A maximizing orientation can be maintained at least conceptually, however, with the placement of a preference map over M which shows one alternative to be better than others.

In summary at this point, a behavioral approach to the theory of firm suggests in the context of Diagram 3 that the student of the firm should enlarge his attention to the normative life space in which the enterprise inevitably operates.

IMPLICATIONS OF A BEHAVIORAL APPROACH

In appraising the meaning and implications of a behavioral economics complement to firm theory, it is apparent that it presents a wide conception of the nature of business enterprise, with participants, processes, and objectives more extensive than the view of these factors in traditional economics. The construct of the modern enterprise sketched here is broader than the more confined abstraction of firm theory. This difference in definition of the enterprise has considerable significance. The traditional firm as simply the entrepreneur-owner is a narrowly bounded organism, with employees, suppliers, and customers free to flow from firm to firm as the circumstances of the market prompt. Employees, suppliers, and customers agree to operate within the firm so long as the wages or prices are satisfactory. Individuals leave the confines of the organization when fairly modest changes in the terms of the transactions develop. The relationship between employer and employee is neutral and non-intimate in its emotional aspects, with each actor as free to quit

[8] See *Business Week*, April 27, 1957, pp. 136–139; editorial page, *Christian Science Monitor*, April 1, 1957; and "Whose Mistakes at Nashua," *Fortune*, November, 1948, pp. 99–100.

the relationship as does the purchaser of a soft drink from a mechanical dispensing machine. The control of the establishment thus is severely limited, facilitating freedom of choice and movement, basic elements in the values of Western life.

On the other hand, the understanding of the enterprise presented in this paper includes processes, objectives, and membership more extensive and complex, with employees, owners, suppliers, and customers to a degree operating as members of the firm. The personalization of the business environment with a focus on security and justice tends to link individuals to the firm in ways ignored by the traditional view. The employee, for example, is drawn into a more intimate relationship with the establishment than that expressed simply by the wage contract. Employees, suppliers and other participants are still free to leave the firm for greener fields if the price is not right—except that with a behavioral model "the price" includes a whole range of pecuniary and non-pecuniary considerations.

It is sufficient at this juncture to catch but a glimpse of the dilemmas, paradoxes and issues which arise out of these alternative conceptions of the enterprise. Perhaps the most suitable position in appraisal is the conclusion that both aspects are present in the contemporary firm. The first is a production machine for profit, but it is also a human organization with other values, complicating the objectives and activities which are implied by the profit and production characteristics.

A behavioral understanding also has some implications relating to the nature and scope of economic science, for it indicates a more wide ranging definition and methodology than that of traditional economics. The narrow confines of a Lionel Robbins statement of economics are traded for a Marshallian definition of economic science. Such a model or conception, moreover, is surely a non-Euclidean economics as noted earlier, an economics stressing socio-cultural factors and accentuating the usefulness of propositions largely counter to orthodox assumptions and propositions. The psychology of the businessman extends in this discussion, for example, to a motivation more complex than maximizing profits, extending as with the consumer to the maximization of satisfaction. Again it is not the unrealism of the profit maximization assumption which prompts this complementary construction but rather its predictive and operational shortcomings. Insight into the social norms associated with the business role may give more predictive success.

A behavioral approach to firm theory, of course, lacks the revolutionary cast which these words may imply as it has a linkage with accepted economic analysis. The graphic portions of this paper indicate this linkage or association. What is a behavioral economics but an "interstitial discipline," to use the words of Kenneth Boulding, a discipline found at the intersection of economics, social psychology, and sociology. It is in that region of economics inhabited particularly by such figures as John R. Commons, J. M. Clark, R. H. Tawney, Clarence Ayres, and Neil Chamberlain—a region whose geography calls for analysis of socio-cultural dimensions to economic subject matter.

Reflecting the linkage with the mainstream of economic analysis, a behavioral view has both positive and normative overtones. This frame of reference as the traditional conception of enterprise and economic order is a neutral analytical tool which on occasion is vulgarized and shaped into a creed or ideology. "Free private business enterprise" is a vulgarization of the elaborate market mechanism of the scholar, while a goodly proportion of the discussion concerning "social responsibilities of the businessman" is but a crude statement of some of the insights of a behavioral understanding of the firm. In both instances, the creeds' aim is to fit the needs and position of those espousing them. As a comment of warning here, however, the idea of a creed or apologetic does not necessarily carry with it censure and disapprobation, for all individuals unavoidably possess a creed or perspective through which they view the meshing of their activity with that of the community at large. It is sufficient to note that both the abstractions of traditional theory and the behavioral complement serve as the intellectual bases of business creeds or philosophies.

Finally, a behavioral conception, as the market model, has certain public policy implications concerning the firm and the economic system. Its emphasis upon the interacting economic, physical, social, and legal life spaces of the enterprise and upon a multi-goal value structure

coincide with the "mixed economy" description of the 20th century economic order. The economy is mixed not only in its market structures, but also in its goals and institutional arrangements. These diverse norms and values apparently suggest the desirability of market competition and, in many instances, of public and private regulation of business practices. A behavioral understanding thus does not imply simply an anarchy of private conscience or a benevolent paternalism. Rather it indicates institutional patterns which blend informal social processes, the forces of inter- and intra-industry competition, countervailing power, and government action to make an economic order capable of achieving in considerable measure the values and goals of American life.

INTERNATIONAL INVESTMENT AND THE NATIONAL INTEREST

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The theory of the national distribution of gains from international movements of productive agents was sadly neglected by the classical and neo-classical economists, and the void which those writers left in this respect is still reflected in the majority of our undergraduate textbooks.

This paper is by no means an attempt to fill the theoretical gap, but it is an effort to deal with one policy problem to which a general theory of the gains from international investment might be applied. The problem concerns the allocation which a "capital-rich" country like the United States should make of its current real saving between home and foreign investment in order to maximize its national product. The thesis here is, in brief, that the *private* comparison of the rate of return on investment abroad with that at home is inappropriate for guiding the allocation of investable savings in the *national* interest.

The assumptions of the discussion are the following:

(1) Universal full employment and constant balance of payments equilibrium. That is to say, I wish to isolate us from the much discussed problems of the contribution of international investment to employment levels and the role of capital movements in the balance of payments. The transfer process is regarded as "frictionless," and the argument is essentially "classical";

(2) Stable exchange rates;

(3) Complete absence of transfer costs for capital and its earnings; and

(4) Perfect competition within countries, factors being paid their marginal products.

The argument explicitly skirts some dynamic complications, such as the relative effects of home and foreign investment on rates of saving and the ability of one industry to provide "growing points"[1] for society more than another. I use the terms "lending country" and "borrowing country" in their generic sense of a capital-providing country and a capital-receiving country, regardless of the form of debt or equity claim which is created.

I. THE DOMESTIC RISK EFFECT

There are four main points which I wish to consider, the first of which may be called the domestic risk effect. It is borrowed from an article by Keynes, and his graphic statement of it is worth quoting:

> Consider two investments, the one at home and the other abroad, with equal risks of repudiation or confiscation or legislation restricting profit. It is a matter of indifference to the individual investor which he selects. But the nation as a whole retains in the one case the object of the investment and the fruits of it; whilst in the other case both are lost. If a loan to improve South American capital is repudiated we have nothing. If a Poplar housing loan is repudiated, we, as a nation still have the houses. If the Grand Trunk Railway of Canada fails its shareholders by reason of legal restriction of the rates chargeable or for any other cause, we have nothing. If the Underground System of London fails its shareholders, Londoners still have their Underground System.[2]

Keynes was saying that the private investor has a perspective on certain risks which is inappropriate for the national interest. This is not so for all risks, of course. Risks of property destruction by fire or other natural hazards are risks of national loss as well as private loss, at home or abroad. So, too, is risk of property loss due to technological obsolescence or to shifts in consumer tastes. But there are some risks to the private investor—risks of unfavorable regulation or outright expropriation, risks of demands from militant trade unions (if we might relax our assumption of perfect competition for a moment), etc.—which are risks both to the private investor and to his nation as a whole when investment takes place abroad, but which are risks only to the private investor when investment

[1] See, for example, H. W. Singer, "The Distribution of Gains between Investing and Borrowing Countries," *American Economic Review*, May 1950, XL, especially pp. 480–81.

[2] J. M. Keynes, "Foreign Investment and National Advantage," *The Nation and the Athenaeum*, August 1924, Vol. 35, p. 586.

takes place at home. Thus, there emerges a divergence between the private and the national interest in foreign investment as compared to investment at home. The national interest, if we may take it as in some measure independent of internal income transfers, calls for the use of some savings at home which private capitalists may choose to invest abroad.

S. H. Frankel has attempted a rebuttal of Keynes' argument by contending that the point neglects "that for investment purposes the world-economy of the Great Powers and their peripheral and Colonial dependencies were one, and should be regarded as one." He goes on to say,

> To put the matter more forcibly, the arguments advanced by Keynes ... would at that time (the nineteenth century) have been regarded as absurd, because the London Underground was thought of as serving a Metropolis of the World, rather than the capital of yet another little nation state. London ... might not have required an Underground System, if it had remained the capital of 'a little England', just as it may no longer be able to afford those 'houses in Poplar' should it again be forced to become one.[5]

Frankel thus falls back on the assertion that England is better off for having fostered international specialization than she could possibly have been by remaining more nearly in isolation. But is this necessarily true when becoming a "metropolis of the world" involved a strenuous limitation on the rate of domestic capital formation and perhaps on the intensification of domestic specialization?

II. THE DIMINISHING MARGINAL PRODUCT, OR FACTOR COMPLEMENT, EFFECT

This matter of the valuation of domestic specialization relative to international specialization is an appropriate bridge to my second point, the "diminishing marginal product," or "factor complement," effect.

The fear that capital formation in primary producing regions will tend to be channeled into manufacturing and reduce the volume of international trade has often quite naturally arisen in the minds of industrialists dependent upon export markets or on imported raw materials. And economists have sometimes been slow in pointing out that when diminishing international trade accompanies international investment this is not *ipso facto* evidence of a decline in world welfare. Economists who have been guilty in this matter have apparently been influenced by the arguments of Ricardo and Mill which associated the level of world welfare with the volume of private international trade when national productive endowments were assumed to be given. But the association of trade with welfare fails with the removal of the assumption concerning factor immobility. Allowing factor mobility, one must turn to some kind of comparative productivity analysis to assess resulting changes in welfare—the device classical economists themselves used in their analysis of the domestic economy.

A marginal productivity analysis may be found in both Lerner's *The Economics of Control*[6] and Meade's *Trade and Welfare*.[7] The argument can be posed in terms according to which an investment's yield is taken to be a function of the national economy's *stock* of capital relative to other factors of production, or it may be posed in terms in which the yield is a function not only of the factor stocks but of the rate at which investment is being executed. I adopt the latter formulation here.[8] According to it, the more rapidly investment proceeds in any given period, the more rapidly the marginal productivity of investment will decline. The return on foreign investment to a *private* group is the marginal productivity of the investment, but the *national* return on each increment to the foreign investment rate is less than the private to the extent that national capital previously invested abroad is adversely affected.[9] Domestically, in-

[5] *Some Conceptual Aspects of International Economic Development of Underdeveloped Territories*, Essays in International Finance, No. 14 (Princeton: Princeton University Press, 1952), pp. 11–12.

[6] Abba P. Lerner, *The Economics of Control* (New York: Macmillan Company, 1944), pp. 364–66.

[7] J. E. Meade, *The Theory of International Economic Policy*, Vol. II: *Trade and Welfare* (New York: Oxford University Press, 1955), pp. 462–63.

[8] Cf. Lerner, *op. cit.*, Chapter 25, wherein the schedule of the marginal productivity of capital is defined as capital's yield when there are alternative stocks of capital and a zero rate of investment, and the schedule of marginal efficiency of investment represents capital's yield at alternative rates of investment, given the stock of capital.

[9] The marginal productivity of foreign investment (this is approximately Lerner's *mei* applied to investment abroad) may be less from the national view than from the private view not only because further capital formation abroad will affect

vestment may reduce the rate of return to pre-existing capital, but only because it raises the marginal productivity of other factors. Therefore, domestic investment may redistribute income away from domestic capitalists and in favor of domestic landholders and laborers; but foreign investment redistributes income abroad away from domestic capitalists and in favor of *foreign* landholders and laborers.[8] Put in another way, if we visualize a declining marginal productivity of investment schedule, we may say that the average productivity of investment exceeds investment's marginal productivity, and whereas abroad the most income the lending country can hope to receive on each of its properties is the *marginal* productivity of investment, at home it receives the *average* product. Or, again, the country which is using capital receives a sort of consumer's surplus; and when capital is used abroad the "surplus" goes to the foreigner, but when capital is used at home, the "surplus" is retained at home.[9]

This matter does not involve a divergence of the national from the private interest in investment at home, as did the risk effect discussed above; but it does involve a reduction of the national interest, relative to the private, in investment abroad. The policy implications are, of course, the same. The diminishing marginal product effect requires that there be more investment at home, rather than in foreign countries, than private investors in a perfect market will undertake.

One objection that can be raised to this diminishing marginal product effect is that the argument assumes national aggregate production functions to be homogeneous of the first degree. This assumption is involved since the analysis takes the *private* marginal products of factors used at home, that is, the return they tend to be paid by employers in a competitive market, to be identical with *national* marginal products. If the national production function showed increasing returns to scale, the private marginal product of any factor would be less than the national marginal product by the amount of economies which the factor generates external to the firm by which it is employed, and if in these circumstances all factors were paid their national products, the total distribution would more than exhaust the total product.[10] When the assumption of first order homogeneity is relaxed, new possibilities for divergences in the private and national interest in both home and foreign investment appear which can be either on the side of making the private marginal interest in foreign investment greater than the national, or vice-versa.

Another objection can be that it avoids the problems in the measurement of aggregates raised by income redistribution. Although we have avoided international income comparisons here by considering the income of only one country, we have not avoided interpersonal comparisons. To the extent that the market value of two outputs are not comparable for welfare purposes when the interpersonal distribution of income has been affected in the shift from one output to the other, the marginal productivity schedules dealt with above are not unique functions. Each of the variables of

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the marginal productivity of capital, but because more rapid capital formation abroad will bid up the prices of foreign goods or services needed to implement all those investments being carried out in the current period. Increases in prices of specialized factors in the home country due to the shifts in demand caused by an increased rate of foreign investment do not, of course, imply a national loss.

[8] The earliest explicit discussion of the point known to me is that by Knut Wicksell in *Vorlesungen über National ökonomie* (Jena, 1914), Heft I, referred to in Bertil Ohlin, *International and Interregional Trade* (Cambridge: Harvard University Press, 1933), p. 339, n. 1. Even Ricardo, however, may at least have sensed it. Werner Hochwald has called my attention to Ricardo's comment that he would "be sorry to see weakened" that disinclination which men have for sending their capital to foreign countries. David Ricardo, *The Principles of Political Economy and Taxation* (1817), Everyman's Edition (New York: E. P. Dutton Company, 1943), p. 83.

[9] The arguments of sections I and III of this paper are applicable to the acquisition of foreign land as well as to the provision of capital equipment to other countries. The argument here, however, and that of section IV are applicable only to capital.

[10] Meade's assumption (*op. cit.*) that "modified laissez-faire" policies to equate private and social returns are followed in each country involved is inadequate to cover the case of increasing national returns to scale since no national policy could make national product adequate to pay every factor its marginal product. Cf. Joan Robinson, "Euler's Theorem and the Problem of Distribution," *Economic Journal*, September 1934, XLIV, especially pp. 409–10, for the exposition of the point in the text with respect to an industry.

the functions, "capital," "investment," and "product," are aggregates which will be affected by the very redistribution of income which a movement along the "schedules" engenders. The "product" aspect of this difficulty is of course sometimes treated with the "compensation" and "bribery" principles. But these, when adopted, do not permit a unique measurement of any welfare gain that occurs and may leave a substantial range of possibilities indeterminate between "gain" and "loss."[11]

Despite the difficulties in aggregate measurements, however, and the dangers of assuming simple aggregate production functions, I believe there is something "real" in the fear that when a nation's potential capital is invested abroad, the domestic factors, labor and land, are being denied something which would complement their own productivity.[12]

III. THE FISCAL EFFECT

The third argument to be considered is the "fiscal effect," and its first part deals with taxes. To the extent that tax income is foregone by the lending country on foreign investment—for example, through the allowance of foreign taxes as a credit against domestic tax liability—another possible divergence between the national and the private interest in foreign investment appears. The reason for this is that the private investor will consider the return *after* taxes, both at home and abroad, in making investment decisions, whereas his country as a whole is concerned with the return after taxes collected abroad but *before* the taxes collectable at home. The case is analogous to the "domestic risk effect," our first argument, in that the national interest in investment at home is greater than the private interest, although abroad the two interests are the same.

The "fiscal effect," however, has another side. One must consider the burden of government services required by investments at home and abroad. At this point general principles fail us, for what we seek to know is to what extent a domestic investment generates tax income over and above the cost of incremental public services required—that is, the extent to which the fiscal system transfers benefits from a domestic investment to the remainder of society—as compared with the similar transfer to domestic residents obtainable from investment abroad. The result for any country depends upon its tax policy at home and abroad and the nature and extent of the services it provides each of the two kinds of investment.

With respect to the United States, I believe it to be a fair assumption that the fiscal transfer obtainable from domestically emplaced capital exceeds that obtainable from abroad. For while the "services" provided United States capital abroad are undoubtedly rather small, so is the tax revenue from that source. And domestically the general property tax and corporation income tax combine to effect a heavy transfer to society out of the revenue of capital.[13] Fiscal effects, in this circumstance call for keeping capital at home. Indeed, only "double taxation" of foreign investment—imposition of domestic taxes after foreign taxes—to the extent of the transfer disparity is consistent with the allocation of capital

[11] Fritz Machlup pointed out many of the difficulties of factor definition for marginal productivity analysis in his "On the Meaning of the Marginal Product," in *Explorations in Economics* (New York: McGraw-Hill Book Company, 1936), pp. 250–63, reprinted in American Economic Association, *Readings in the Theory of Income Distribution* (Homewood, Ill.: Richard D. Irwin, 1946).

[12] The magnitude of the divergence between national and private returns from foreign investment depends on such factors as the U. S. share in the rate of capital formation abroad, on the U. S. share in capital stocks abroad, and on the extent to which the process of foreign capital formation makes use of foreign resources. Although the U. S. share in capital formation in many foreign countries is small, so that the factor complement effect must be small, in some the U. S. share in capital accretion is large. The U. S. capital flow to Panama in 1954–55, for example, was 89 percent of Panama's gross national investment; the similar proportion for Venezuela, 1951–55, was 84 percent; and for Colombia, 1951–55, it was 64 percent.

[13] I have estimated the tax revenue obtained from U. S. direct investment abroad in 1954 to be, at the outside, $199 million, or 1.13 cents per dollar of direct investment. Domestic corporations in that year paid $28,987 million in taxes, or about 12.6 cents per dollar of equity capital. Taxes paid by domestic corporations constituted 36 percent of the tax "take" by all governmental units. Allowing for the fact that the final incidence of much of the taxes paid by domestic corporations may not rest on equity capital (and hence may not be lost when capital goes abroad) and that the presence of this factor undoubtedly requires some government services for its proper functioning and for the protection of the public welfare, I believe that the fiscal transfer from domestic capital must yet far exceed that obtained from capital abroad.

in the national interest, so far as the fiscal effect is concerned.

IV. THE TERMS OF TRADE EFFECT

The fourth matter I want to mention is the "terms of trade effect." In contrast to the argument of section II, above—that some aspects of the complementarity of capital to other factors are lost by the lending country when investment is foreign investment—it may be argued that foreign investment may be complementary to domestic factors in ways domestic investment is not. Hans Singer has been an often quoted exponent of this view, Singer having argued that "the burden" of advantage from foreign investment has gone to the investing countries through improvements in their terms of trade and through perpetuation of a primary product orientation in the borrowing countries.[14] A. K. Cairncross, too, has stated that foreign investment before 1914, because of its effectiveness in cheapening imports, was more complementary to British labor than domestic investment could have been.[15] And Pigou supported this position.[16]

That foreign investment *may* improve the international terms of trade of a lending country is rather obvious. Investments may cheapen the country's imports or facilitate the marketing of its exports. But foreign investment may also compete with domestic resources and worsen the international terms of trade. It can develop competitive sellers of the lending country's exports and competitive buyers of its imports.[17] Here the issue is joined.[18]

A favorite route of economists out of this impasse has been to call upon the increased real income and demand which investment presumably generates abroad as proof that on balance the lending countries need not suffer. But against this growth in demand abroad must be set a loss in demand at home. It is only the effects of the total shift which are worthy of consideration in our problem.

J. E. Meade is much too careful to fail on such a point, and his excellent analysis of the terms of trade effect,[19] although limited to two countries and commodities, is worth summarizing. Meade notes that an international capital movement will have both demand and supply effects on the international terms of trade. On the side of demand, there will be some redistribution of income, both within the countries affected and between them, and there will also be some growth in real world demand to the extent that investment has a higher marginal productivity in the borrowing country than in the lending country. The effect of all these demand changes on the international terms of trade will depend, simply, on the way in which the "losers" reduce their spending and the manner in which the "gainers" increase theirs. Unfortunately, no generalization is possible. With regard to supply, Meade points out that the pattern of international specialization may be what it is because production tends to be specialized, by accident or design, according to *countries* so that each country tends to produce what it does almost regardless of changes in its endowment of mobile factors. If this is the case, a movement of capital from A to B will tend to reduce the supply of the good A produces and to increase the supply of that which B produces. The international terms of trade will tend to move in favor of the lending country. On the other hand, production may not be specialized to countries so much as it is specialized to *factors*, some products being capital-intensive and some labor-intensive. If this is so, a capital movement from A to B will tend to increase the relative supply of capital-intensive goods produced in the world, and if these are the goods which the lending country exports, the international terms of trade will move against the lending country and in favor of the borrowing country.

It seems to me that Meade's two-country,

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[14] *Op. cit.*

[15] He does note, however, that it was "far from evident" that similar circumstances held after 1914. A. K. Cairncross, *Home and Foreign Investment, 1870–1913* (Cambridge: Cambridge University Press, 1953), pp. 233–35.

[16] A. C. Pigou, *The Economics of Welfare*, 4th ed. (London: Macmillan Company, 1932), pp. 662–64.

[17] In fact, the same investment may complement some domestic activities and compete with others.

[18] Herbert Feis, *Europe, The World's Banker, 1870–1914* (New Haven: Yale University Press, 1930), especially Part II, chronicles European reactions to the dilemma, and Albert O. Hirschman, "Effects of Industrialization on the Markets of Industrial Countries," in Bert Hoselitz (ed.), *The Progress of Underdeveloped Areas* (Chicago: University of Chicago Press, 1952), especially pp. 276–83, cites some interesting protests and summarizes European and United States attitudes toward industrialization in "new" areas.

[19] *Op. cit.*, pp. 428–57.

two-commodity analysis takes him quite far. Indeed, extending the analysis to more than two countries and more than two commodities adds little to its comprehensiveness other than extending the variety of possible mutations; the possible favorable or unfavorable effects on the terms of trade of the lending country remain symmetrical.[20] And, furthermore, the analysis is happily in terms of the effect of foreign investment relative to "what might have been" as a result of home investment and can as well be restated with the conclusion that *home* investment may cause a country's international terms of trade either to improve or to deteriorate relative to what they might have been had the country placed that investment abroad.[21]

Trade diverting effects of foreign investment may have some importance for a lending country's international terms of trade but, on the other hand, may tend easily to be overstated. Investment by country A in country C may divert subsequent demand in C toward the exports of A at the expense of those of B. But an improvement in A's terms of trade of this sort is not only not a cosmopolitan gain, it is not an improvement for A except to the extent that the foreign investment has more effect in diverting demand toward A's producers than domestic investment in A would have had.

The terms of trade effect, then, remains problemmatical. Still there is one more aspect of it that deserves consideration. This is, to what extent is the terms of trade effect, be what it may in net terms, additive to those effects we have considered above? In particular, may not the terms of trade effect of an international investment have been partially taken into account by the private investor when he estimated the marginal yield of the investment to him? May not the refiner or marketer of oil, for example, have included the saving to himself from lower cost supplies when he calculated the return on the development of foreign reserves? It certainly seems likely that he will have done so, and it seems likely that this has been done with respect to most undertakings of the "direct" investment type. Therefore, the terms of trade effect we have discussed will only create a divergence between the private and national interests to the extent that the private investor has not already taken all terms of trade effects into account in his own calculations.[22] The net result of this may be to make the magnitude of divergence in the private and national interest on account of this effect small.

V. CONCLUSIONS

In conclusion let me reiterate that it is impossible to say anything unequivocal about the direction of divergences between national and private interests in the matter of foreign investment. I should like to re-emphasize, however, that in certain respects, apart from effects of investment on the international terms of trade, the return to the nation from investment at home is greater than the return seen by the private investor, and the return from investment abroad is less. The aspects of this I have mentioned are:

(1) That certain domestic risks to the private investor are not risks to the nation at all, whereas similar risks abroad are shared by the private investor and his nation;

(2) That resources of the genus capital are almost certainly complementary to other broad classes of factors, and that foreign investment forfeits such rewards in the first instance to the foreigner, whereas domestic investment does not; and

(3) That taxes in the lending country on domestic property and property income are retained by the lending government, whereas those

[20] Charles R. Whittlesey, in "Foreign Investment and the Terms of Trade," *Quarterly Journal of Economics*, May 1932, XLVI, pp. 444–64, analyses the influence of international investment on the terms of trade using F. D. Graham's arithmetic models of several countries and several commodities. He, too, is forced to the conclusion that "foreign investment may affect the trade of investing, investee, and neutral countries in almost any conceivable manner," although his results are somewhat limited by the restrictiveness of his assumptions (1) that demand elasticities are everywhere zero with respect to price, (2) that these are unitary with respect to income, and (3) that costs are constant.

[21] The recognition that domestic investment, for example in import substitutes, may have indirect benefits to the country through the terms of trade is simply a re-encounter with the now familiar principle that a tariff to encourage import-competing industries may shift a country's terms of trade favorably and be in the national interest.

[22] This point is, of course, also applicable to the "factor complementarity" effect discussed above, but it seems more likely to be of practical importance here than there.

imposed by foreign nations on this nation's property abroad may be lost.

It is worth noting that, in the degree that the lending country is denied rewards when its capital is used abroad, the borrowing country obtains them, these rewards being the well-recognized fruits which the borrower receives after the investor is paid the marginal product of the investment. These hidden fruits, nonetheless, seem to be easily forgotten, and it is perhaps ironical, on purely economic grounds, that it is the borrowing countries who are often reluctant and the lending countries who are often eager to see the rate of international investment expanded.

The limitations of the foregoing for purposes of policy prescription are obvious. Full employment, perfect competition, and continuous balance of payments equilibrium have been blithely assumed. I have not considered terms of trade effects of the transfer process nor welfare aspects of changes in the distribution of income within countries. Numerous dynamic problems have also been suppressed.

Furthermore, the discussion has omitted consideration of some arguments which might be offered in rebuttal. The ignorance, for example, of investors concerning opportunities abroad as compared with those at home may prevent investment from proceeding externally to the point at which the marginal productivities of investment at home and abroad, in either the private or national sense, become equal. Further, United States foreign investment, though it may move in only small amounts toward the areas and uses served by the foreign aid program, may be a partial substitute for foreign aid, thereby diminishing a tax burden on this country. And again, economic considerations by no means exhaust the dimensions in terms of which "national welfare" is measured. Indeed, the nation itself is probably an inappropriate grouping for welfare considerations. Myrdal may be quite right in warning that the Marxian spectre has retreated from the Western industrialized countries only as social reform aimed at redistributing economic rewards has dawned and that in the shadowy world of international affairs the spectre still roams at large.[23]

Nevertheless, I have a strong suspicion that our profession needs much more knowledge than is available before it lends its support to the well publicized thesis that the national economic interest justifies stimulating private foreign investment.[24] Where an international grouping is appropriate for welfare considerations, private and social views of international investment reach the same degree of consonance as they possess *vis-a-vis* intra-national decision making. And where political and humane considerations are paramount, economics plays at best a staff advisor's role. But to the extent that matters of national economy are concerned in drafting international policy, we must remember that it is the theory of imperfect, rather than perfect, competition which is usually relevant and that a calculated policy of restrictiveness may be superior to a policy of abundance.

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[23] Gunnar Myrdal, *An International Economy* (New York: Harper & Brothers, 1956).

[24] Roy Blough, "United States Taxation and Foreign Investment," *The Journal of Finance*, May 1956, XI, pp. 180–94, expresses similar skepticism: "In weighing the considerations which have thus far been described reasonable men can arrive at different conclusions. My own conclusion is that if tax incentives [to stimulate investment abroad] are to be justified it must be on the grounds of their support of foreign policy objectives not on grounds of fairness or of the needs of the United States economy" (p. 189).

AN ECONOMETRIC MODEL OF THE UNITED STATES: 1947–1958

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The econometric model herein presented has its origin in the authors' concern for the problem of unemployment in the United States in the post-war period. Two aspects of the question stand out. First, what factors can explain the fluctuations in the level of employment in the 1947–58 period, and, secondly, what are the prospects for maintaining high levels of employment in the immediate future? The attempt to construct a model which can thus explain and predict began with a perusal of the pioneer work in the field.

Jan Tinbergen's econometric system is acknowledged as the foundation for all that follows in this discussion. He has combined into a complete statistical model the various functional relationships existing among the principal income aggregates.[1] His work has been refined by Lawrence R. Klein,[2] and more recently by Klein and Arthur S. Goldberger,[3] who introduce the concepts of Keynesian theory into a mathematical-statistical system. Both for the hypotheses which have been accepted and for those which have been rejected, the investigations of these writers, and of Carl F. Christ[4] and of K. A. Fox[5] in their testings of the earlier models, have been invaluable. We are also greatly indebted to Howard Barger[6] and Milton Gilbert[7] for their reductions of key income series into quarterly terms. Without their contributions, neither this work nor that of Colin Clark, from which ours borrows heavily, would have been possible.

Colin Clark, in "A System of Equations Explaining the United States Trade Cycle,"[8] has described the operation of the American economy through the use of seven equations containing seven endogenous and three exogenous variables. This basic simplicity is to be compared with the forty-eight-equation system of Tinbergen, the fifteen-equation system of Klein, and the nineteen-equation system of Klein and Goldberger. If it impairs neither the logical consistency nor the predictive reliability of the model, such simplicity has definite practical advantages. So too does Clark's use of quarterly data as opposed to the annual values of other systems. Quarterly figures allow the detection of intra-year lead-lag relationships among determining variables; further, their superiority in predictions for policy guidance is apparent. But, despite these avowed merits, the Clark system fails to provide acceptable results when applied to the post-war period. We were thus compelled to reconsider his relationships. The course and consequences of this investigation are presented and discussed in the sections which follow.

I. A DEFINITION OF THE MODEL

Before discussing the manner in which we proceeded from the Clark system of equations to the specific form of the model in Section III below, it will be of help to the reader if we supply a general definition of our model. Each of the variables is defined as in the National Income Ac-

[1] Jan Tinbergen, *Statistical Testing of Business Cycle Theory, II. Business Cycles in the United States, 1919–1932* (Geneva: League of Nations Economic Intelligence Service, 1939), and *Business Cycles in the United Kingdom, 1870–1914* (Amsterdam: North-Holland Publishing Company, 1956).

[2] Lawrence R. Klein, *Economic Fluctuations in the United States: 1921–1941* (New York: John Wiley & Sons, 1950).

[3] Lawrence R. Klein and Arthur S. Goldberger, *An Econometric Model of the United States, 1929–1952* (Amsterdam: North-Holland Publishing Company, 1955).

[4] Carl F. Christ, "A Test of an Econometric Model for the United States, 1921–1947," *Conference on Business Cycles* (New York: Universities—National Bureau Committee, 1951), pp. 72–77.

[5] K. A. Fox, "Econometric Models of the U.S. Economy," *Journal of Political Economy*, LXIV (1956), pp. 135–136.

[6] Howard Barger, *Outlay and Income in the United States: 1921–1938* (New York: National Bureau of Economic Research, 1942).

[7] Milton Gilbert, *National Income and Product Statistics of the United States: 1929–46: Supplement to the Survey of Current Business* (Washington, D. C.: Department of Commerce, 1947).

[8] Colin Clark, "A System of Equations Explaining the United States Trade Cycle: 1921–1941," *Econometrica*, XVII (1949), pp. 93–124.

counts[9] and, with the exception of employment (E) and interest (i), is measured quarterly in billions of 1954 dollars, seasonally adjusted. Employment is expressed in millions of workers, seasonally adjusted,[10] while interest appears as a relative fraction, unadjusted. The Department of Commerce price deflators for gross national product have been applied to all current dollar magnitudes.[11] The variables of the model are then indicated as follows:

C	represents personal consumption expenditures on non-durables and services.
D	represents personal consumption expenditures on durables.
H	represents expenditures on new private construction, residential non-farm and other.
$\overline{H}$	represents the stock of construction.
G	represents investment in newly produced producers' durables.
$\overline{G}$	represents the stock of producers' durables.
X	represents total private domestic outlay or sales.
J	represents net change in inventories.
$\overline{J}$	represents the stock of inventories.
P	represents the total of government expenditures on goods and services, government interest payments, government transfer payments, and subsidies less current surpluses of government enterprises.
F	represents net foreign investment.
Y	represents gross national product plus government interest and transfer payments, or income.
Y_{-t}	represents income, t quarters earlier.
E	represents total civilian employment, agricultural and nonagricultural.
y_{-t}	represents the deviation of Y from its trend value, t quarters earlier.
d_{-t}	represents the deviation of D from its trend value, t quarters earlier.
i_{-t}	represents the average yield on domestic corporate bonds (Moody's), t quarters earlier.
$(Y - P)^*$	represents "income less government expenditures" determined from trend.
e_{-t}	represents the deviation of $(Y - P)$ from $(Y - P)^*$, t quarters earlier.
Π_{-t}	represents corporate profits after taxes, t quarters earlier.
π_{-t}	represents the deviation of "corporate profits after taxes" from their trend value, t quarters earlier.

Using the above notation, the functions of the model may be written in general form as:

$$\text{(i)}\quad C = C(X + P).$$

$$\text{(ii)}\quad D = D(X, d_{-t}).$$

$$\text{(iii)}\quad H = H[(Y - P)_{-t}, i_{-t}].$$

$$\text{(iv)}\quad G = G[(Y - P)^*, e_{-t}].$$

$$\text{(v)}\quad X = C + D + H + G.$$

$$\text{(vi)}\quad J = J(\pi_{-t}).$$

$$\text{(vii)}\quad Y = X + J + P + F.$$

$$\text{(viii)}\quad E = E(Y).$$

The model consists of eight equations involving the eight endogenous variables, C, D, H, G, X, J, Y, and E, and the three exogenous variables, P, Π, and F.

II. THE CONSTITUENT FUNCTIONS

(1) *The Consumption Function.* Following Clark, the investigation of the consumption function began with the relationships of total consumption to various combinations of current and lagged income and to various Modigliani Factors. The Clark concept of income (including government interest payments, transfers, and subsidies less current surpluses of government enterprises)

[9] *National Income and Product of the United States; 1929–1950: A Supplement to the Survey of Current Business* (Washington, D. C.: Department of Commerce, 1951).

[10] A quarterly series for total civilian employment was obtained by averaging monthly figures taken from the *Survey of Current Business* and adjusting them for seasonal variation using calculated coefficients of 1.028, .997, .978, and .997 for successive quarters within a given year.

[11] Current values have been taken from the following sources: *Business Statistics, 1949: A Supplement to the Survey of Current Business* (Washington, D. C.: Department of Commerce, 1949); *Business Statistics, 1951; Business Statistics, 1953; Business Statistics, 1955; Survey of Current Business*, July 1958, and January 1959.

was employed, it being assumed that consumption would depend upon transfer as well as upon earned income elements. Nevertheless, the results of these "least squares" regression determinations were not wholly satisfactory. For instance, taking consumption as a function of income lagged one quarter and of the Clark "Modigliani Factor," a negative coefficient for income resulted. Although its impact was counterbalanced by a high positive coefficient for the Modigliani Factor, this relationship, as several others, was ruled out by economic experience. Indeed, our work served only to corroborate the findings of Arnold Zellner to the effect that lagged income did not exert a significant influence upon consumption.[12] In fact, were it not for a difference in our approach to the consumption relationship, Zellner's short-run consumption functions utilizing variables of income, lagged consumption, and liquid assets, would have been accepted. However, his functions, as those determined independently by us, failed to provide consumption series sufficiently close to the observed values in the post-war period.

Our inability to predict consumption accurately induced us to consider its various components. We had initially accepted Clark's contention that "... at a time when consumers held large quantities of durable consumption goods, the fall in demand for durables was matched by a rise in demand for non-durables of the same order of magnitude ... (this being) ... a special case of Klein's propositions, based on an analysis of wartime and immediate post-war consumption, and showing the very high substitutability between durable and non-durable goods in satisfying consumers' demand."[13] Upon separating consumption into the categories of non-durables and services (C) and of durables (D), Clark's hypothesis became much less convincing. Since non-durables and services fluctuated little from an upward linear trend while durables displayed a definite pattern of variation, the two series seemed to have little in common. Certainly the element of compensation put forth by Clark was not evident in the 1947–57 period. It seemed, instead, that underlying the movements in each branch of consumption was a unique set of determinants. In retrospect, this realization was a most significant breakthrough. Without it, we would never have been able to "close" our system.

Multiple correlation analysis using variables suggested by visual inspection of several plotted series yielded satisfactory relationships for both components of consumption. Consumption of non-durables and services was best expressed as a function of current private domestic outlay plus government expenditures, the specific equation being (i) $C = .423(X + P) + 11.43$; $r = .97$. Thus, Clark's inclusion of transfers in income in this case seemed to be justified. Furthermore, it allowed us to explain the maintenance of sales of non-durables and services in contrast to the sharp declines in durables during the 1951, 1954, and 1957 recessions.

It should be noted that disposable income was also considered as the independent variable in the non-durables consumption function. Although this relationship yielded estimated values little different from those obtained using (i) above, the coefficient of correlation was significantly lower. Since the function had no unique advantages to offset this weakness, it was not made a part of the model.

The consumption of durables exhibited major peaks in 1950 and 1955 and minor peaks in 1947 and 1953, a pattern of behavior which later data might establish as a major cycle of 60 months and a minor cycle of 30 months. One could advance the view that there was here a reinvestment cycle responding to the physical, technological, and psychological (style) elements of obsolescence in consumers' durable goods. That is, the 1955 peak might be due in part to the replacement of autos purchased in the 1950 peak and to the replacement of household goods purchased in the 1950 and 1953 peaks.[14] This would then be a case of the familiar "echo phenomenon." In the major peaks, purchases of furniture and appliances associated with the simultaneous booms in residential construction had undoubtedly been an accentuating force. However, obsolescence on any ground would not be rigid with respect to time and the fluctuations in consumers' durables could not be

[12] Arnold Zellner, "The Short-Run Consumption Function," *Econometrica*, XXV (1957), pp. 552–567.

[13] Clark, *op. cit.*, pp. 99–100.

[14] This might also be viewed as the retirement of those models produced immediately after World War II, their replacement by the 1950 models, and finally, the replacement of the gap thus left in the auto stock by the new 1955 models. The average life of the American automobile is assumed to be approximately ten to twelve years (Hans Brems, "Long-Run Automobile Demand," *Journal of Marketing*, XX (1956), pp. 379–384).

wholly attributed to this factor. Consumers' incomes (modified to an extent by the "availability of credit") must play a significant role.

Current domestic outlay proved to be the best indicator of effective demand for durables. When combined with the influence of the reinvestment cycle (measured in terms of deviations of consumers' durables from trend 19 quarters earlier), the resulting function was (ii) $D = .130\,X + .55d_{-19} - 1.97$; $r = .93$.

(2) *The Construction Function.* Our first efforts at determining a behavioral relationship for construction in the post-war period combined the stock of construction ($\overline{H}$) with lagged "profits after taxes" (Π_{-1}) and, subsequently, with lagged deviations of these profits from trend (π_{-1}). We were again proceeding upon the basis of one of Clark's assumptions, namely that the existing stock of construction (as the stock of producers' durables and of inventories) exerted a restrictive influence upon new investment. The results of our analysis, however, suggested quite the reverse. The coefficient of the stock of construction was positive in both relationships, (a) that involving "stock" and lagged profits ($H = .0327\overline{H} + .237\Pi_{-1} - 2.50$; $r = .90$) and (b) that involving "stock" and lagged deviations of profits ($H = .0364\overline{H} + .16\pi_{-1} - 1.10$; $r = .81$). In neither case, nevertheless, was the fit between the observed and calculated series sufficiently close to make the function usable.

Acting upon the belief that residential construction would respond differently to demand factors than other building, construction was divided into these two components. The resulting series failed to show any marked differences in behavior and the added complication seemed to provide little gain. Consequently, aggregate construction spending was incorporated into a functional relationship with lagged income and lagged interest, superior results being obtained by using as the "income" measure total income less government expenditures [(iii) $H = .20\,(Y - P)_{-1} - .40i_{-1} - 5.90$; $r = .87$]. The influence of income upon a basic potential for construction was manifest by the synchronous movements of the income and construction series. As national income rose, funds became available for the satisfaction of the public's desire for modern and more convenient dwellings. At the same time, income increases generated funds which could be used by utility corporations in the extension of their services.

The writers were well aware of a "capacity factor" which should be included in any long-run relationship that purports to describe construction activity. In the 1947–57 period, however, its influence must have been minor for construction can be closely approximated using only income and interest variables. Still the ratio of the number of families to the stock of construction must in time affect the level of current spending.[15] If net family formation remains at the level of 800 thousand and if demolitions do not rise above 200 thousand, then the present annual residential construction rate of 1,200 units must soon prove redundant. Indeed, the excess of our estimated over the actual values of construction in 1956–57 may be a manifestation of this very influence. To the extent it continues, our estimates will tend to be higher than actual construction outlays.

(3) *Producers' Durables Function.* The Ricardian thesis of secular decline in the marginal efficiency of capital due to the growth of the capital stock has been incorporated in the capital functions of Clark, Klein, and Goldberger via the negative coefficient associated with the stock of producer's goods. Our work began along the same lines. We first attempted to relate the spending upon producers' durables in any quarter to the existing stock of capital[16] and (a) to the average profits after taxes for the three preceding quarters, (b) to the lagged deviations of these profits (quarterly) from trend, and, (c) to the lagged deviations of income (including transfers) from trend. In the first and second cases, the correlation coefficients proved to be too low (approximately .50) to allow us to accept the functions. In the third case, a high coefficient of correlation

[15] Significant investigations bearing upon this matter are included in: Klein, *Economic Fluctuations in the United States: 1921–41*, pp. 89–95; C. D. Long, "Seventy Years of Building Cycles in Manhattan," *Review of Economic Statistics*, VIII (1936), p. 183; J. B. D. Derksen, "Long Cycles in Residential Building: An Explanation," *Econometrica*, VIII (1940), pp. 97–116; L. J. Chawner, *The Residential Building Process: An Analysis in Terms of Economic and Other Social Influences*, Industrial Committee of the National Resources Committee, Housing Monograph Series No. 1 (Washington, D. C.: National Resources Committee, 1939).

[16] Two series for "capital stock" in the United States were constructed, one using the traditional ten-year life and the other using a fifteen-year life. Base year (1934) values were taken from Solomon Fabricant, *Capital Consumption and Adjustment* (New York: National Bureau of Economic Research, 1938), p. 271.

(.96) was obtained but the estimating equation ($G = .037\overline{G} + 1.54y_{-1} - .28$) gave results which did not fit closely with the observed values in the end years. Significantly, the coefficient of "stock" in every instance proved to be positive, a finding which moved us to consider a "capacity factor" just as we had done with respect to construction.

Capital stock would seemingly be adequate or inadequate, a stimulant or a depressant to new capital accumulation, according to its relationship to output. To assign a negative coefficient (in the manner of Clark or Klein) or a positive coefficient as in our first relationships was to disregard the aspect of "relative sufficiency" entirely. This thought was implicit in the writings of Evsey Domar,[17] Michal Kalecki,[18] and E. H. Stern,[19] among others, and was explicit in the work of Arthur Smithies.[20] It might also be inferred from the McGraw-Hill Survey of business spending plans for 1958–61 wherein the presence of excess capacity in the amount of 10 to 15 percent in the beginning of 1958 led to downward adjustments in spending intentions.[21] Although the presence of a "capacity factor" was then justified, there was unfortunately no adequate means of measuring its magnitude. We could include the term only in a general statement of the model; the specific form applicable to the postwar period must include an immediate and measurable "demand element." This element proved to be income.

The dominating influence of income was suggested by an inspection of the plotted series of income, deviations of income from trend, and purchases of producers' durables. Income excluding government outlays displayed very nearly the same trend and pattern of fluctuation as did producers' durables and seemed to lead by one to three quarters. The inclusion of government expenditures distorted the correspondence between the two series so this element was excluded. Without government, the relationship of producers' durables to lagged and current income ($G = .019 (Y - P)_{-1} + .0193(Y - P) + 2.01$) had a coefficient of correlation too low (.65) to make the function acceptable. This short-coming disappeared in the relationship involving current income estimated from trend and lagged deviations of observed values from trend, (iv) $G = .057(Y - P)^{\cdot} + .13e_{-1} + 1.50$; $r = .96$. The "capacity factor" which we had considered, but which we could not determine empirically, was evidently of small import during these years.

(4) *The Inventory Function.* Clark's position that the inventory function was the most difficult to determine was well taken. We began with a consideration of both the pre-war and the post-war behavior of inventories relative to income and outlay, concentrating upon the ratio of inventories to income. This ratio fell from very nearly half of annual income in 1921 to one-quarter in 1946. In the 1947–57 period, a simple correlation between inventories and quarterly income showed a one-to-one relationship ($J = 1.001Y_{-1} - 2.70$; $r = .993$). One could therefore expect inventory holdings to grow by approximately $10 billion should income increase by $40 billion in any year.

It proved to be one thing to predict the level of stocks and quite another to predict the quarterly changes in inventories. Changes in inventories computed from "stocks" showed marked discrepancies from actual values thus forcing us to consider other functional relationships. Outlay seemed an appropriate variable to be tested. A simple correlation between changes in inventories and the level of outlay yielded a low (.58) coefficient of correlation. Proceeding in the Clark tradition, we attempted to use various other measures of "total sales." These included lagged changes in income, $(Y_0 - Y_3)_{-1}$; lagged changes in income, $(Y_0 - Y_3)_{-1}$ and $(Y_0 - Y_3)_{-1}$; and, lagged values of the average income during a three quarter interval. The coefficients of correlation were too low in every case except the last (.93) to make the relationships acceptable; in the last, the fit with observed values was extremely poor.

Our initial inspection of the plotted series had suggested a correlation between "profits after taxes" and inventory change. Multiple correlations involving lagged income and lagged deviations of profits from trend and, also, of lagged income deviations and lagged profit deviations,

[17] Evsey Domar, "The Problem of Capital Accumulation," *American Economic Review*, XXXVIII (1948), pp. 777–794.

[18] Michal Kalecki, *Essays in the Theory of Economic Fluctuations* (London: Allen and Unwin, 1939), pp. 116–149.

[19] E. H. Stern, "Capital Requirements in Progressive Economies," *Economica*, XII (1945), pp. 163–171.

[20] Arthur Smithies, "Economic Fluctuations and Growth," *Econometrica*, XXV (1957), pp. 1–52.

[21] *Business Plans for New Plants and Equipment, 1958–1961* (New York: McGraw-Hill, 1959), 12 pp.

generally produced relationships with low (.60) coefficients of correlation and poor fits. The best relationship was found to be that between inventory change and lagged deviations of profits, (vi) $J = 1.26\pi_{-1} + .78; r = .81$. Since a simple correlation between inventory change and lagged deviations of income from trend (y_{-1}) produced a relationship, $J = .19y_{-1} + .78$, it was assumed that the factor .78 in (vi) reflected the growth in inventory in response to the growth trend in income.

It should not be inferred from the foregoing that we are asserting a strong causal influence for profits. We are suggesting that the ratio of the stock of inventories to income provides a potential for further accumulation which is approached according to the deviations of profits from their trend. Without further investigation, we are unable to specify the links of the chain which connect profit deviations to this ratio. It may be that (vi) is nothing more than a particular case of autocorrelation. If so, the inventory function has little to recommend it other than its goodness of fit. In view of the manifest failings of other models in this regard, however, the worth of this "fit" ought not to be minimized. Though it is considered only a tentative relationship, (vi) seems adequate for our needs.

(5) *The Employment Function.* The final relationship requiring comment is that of employment. We began with a scatter diagram depicting values of income and employment from 1947–57. The appropriate function was found to be (viii) $E = .192Y - 43.8; r = .92$. The standard error of estimate was large (1.15) and estimates of employment might then differ from the actual magnitude by sizeable amounts. Such dispersion, a suggestion of variation in the productivity of labor, can be attributed in the main to the time lags associated with accumulations of capital and improvements in technology and to the inertia of hiring and separating procedures.

(6) *The Exogenous Influences.* The exogenous influences are concentrated in the three exogenous variables, government expenditures (P), profits $(\Pi)_{-1}$, and net foreign investment (F). Their values in any quarter must be estimated upon the basis of behavior in the recent past and upon current information. The inclusion of net foreign investment among the exogenous elements seems justified when it is noticed that its magnitude for the United States is relatively small. In the years 1947–57, and with the exception of 1947 when it was significant, the average variation in net foreign investment was between $-.5$ and $+.5$ billion dollars per quarter. Thus, little error is likely to result from assigning arbitrary values to this variable.

In addition to these exogenous elements, other "outside influences" may affect the system. A change in the tax structure, for example, will not only influence profits after taxes but will also influence the consumption functions and, in subsequent quarters, the construction and capital functions as well. The impact of changes of this type can be incorporated in the model only by a recalculation of the parameters specified in each of the affected relationships.

III. THE SYSTEM OF EQUATIONS AND THEIR SOLUTION

The relationships discussed separately above are now combined to form the system of equations which constitute the model. The parameters have been determined on the basis of 1947–57 values by applying the method of least squares to each of the relationships. In (ii), because the deviations of consumer durables from trend in the war period are not considered useful guides to postwar outlays, the regression coefficients are based upon 1952–57 values alone. This deficiency of data was one of the reasons that led the authors to adopt the "least squares single equation" approach; the general understanding of that method by those likely to use this model as a practical tool was another. Obviously, however, the least squares method incorporates some identification bias. The least squares theorem seems certain to have been violated in (i) and (ii) and it is to be expected that some degree of "feed-back" is present in all of the regression determinations. The authors have not attempted to test the sign or magnitude of the net bias so introduced. It may very well be that a reduction of this bias by a "correction procedure" would improve the predictive powers of the model. At the same time, the added complication in procedure would certainly limit the number of practitioners to whom the model might appeal.

Eight relationships make up the system:

(i) $C = .423\,(X + P) + 11.43$.

(ii) $D = .130X + .55d_{-19} - 1.97$ where $d_{-19} = .D_{-19} - (.046t + 7.40)_{-19}$, t being time in quarters and equal to zero in the second quarter of 1952.

(iii) $H = .20(Y - P)_{-1} - .40i_{-1} - 5.90$.

(iv) $G = .057(Y - P)^* + .13e_{-1} + 1.50$ where $e_{-1} = (Y - P)_{-1} - (Y - P)^*_{-1}$ and $(Y - P)^* = .544t + 70.2$, t being zero in the second quarter of 1952.

(v) $X = C + D + H + G$.

(vi) $J = 1.26\pi_{-1} + .78$ where $\pi_{-1} = \Pi_{-1} - (0t + 5.16)_{-1}$.

(vii) $Y = X + J + P + F$.

(viii) $E = .192Y + 43.8$.

To solve the system of relationships for the value of employment (E) in any quarter, one must begin by solving for X. This solution is facilitated by rewriting (v) in the following form:

$$(v') \quad X = 2.237(.423P + .55d_{-1} + .20(Y - P)_{-1} - .40i_{-1} + .057(Y - P)^* + .13e_{-1} + 5.06).$$

Introducing an estimated value for P for the quarter under study and utilising previously determined or observed values for each of the remaining factors, the value of X is obtained. Y is then computed by adding to X the value of J, calculated separately using (vi), and the estimated current quarter values of P and F. Finally, the level of employment (E) is calculated by inserting the value of Y in (viii). The values for each of the endogenous variables may now be determined from their respective functions.

The coefficient of 2.237 in (v') merits brief comment. It arises from the simultaneous determination of C, D, and X, the C and D functions both containing current outlay values. If one were to introduce other functions with similar current outlay terms the magnitude of this coefficient would rise and further magnify any fluctuations in the variables of the system. We have attempted to use construction and inventory functions depending upon current outlay but the consequent growth in the coefficient led to such great distortions in the calculated values of outlay that these functions were abandoned.

The need for estimating the values of the exogenous variables indicates that the model cannot be used for predictions very far into the future. Furthermore, the parmeters of the system require redetermination as often as every one or two years.

IV. GENERAL COMMENTS CONCERNING THE MODEL

Four features of the model which has been constructed are worthy of particular emphasis. In the first place, the fundamental interdependence of the economic variables, perceived by Walras and Pareto and given empirical implementation recently by Wassily Leontieff and others in "input-output" analysis, is here reaffirmed. Secondly, changes in government expenditures tend to have a greater multiplier effect upon outlay and, correspondingly, upon income and employment than do variations in any of the other exogenous variables. In the third place, the possibility of autonomous variations in the endogenous variables is recognized even though it is not specified in the empirical relationships. Finally, the independent generation of fluctuations in the levels of outlay, income, and employment by the endogenous factor, consumption of durables, is a unique and most important characteristic of the model.

(1) *The Interdependence of Economic Variables.* Outlay of the private sector of the economy simultaneously affects and is affected by the endogenous variables of the system (v). In turn, outlay in combination with the exogenous variables determines income (vii). Income determines the level of employment, the ranking variable of the model. Thus, an increase in one of the component elements, an increase in the consumption of durables for example, augments outlay. However, the increase in outlay will exceed the increase in the initiating variable because of the simultaneous impact upon the consumption of non-durables. Total income, reacting to the increase in both elements of consumption, grows with outlay and with the associated change in inventories, profits here being assumed to show some variation in the same direction as that of outlay. The effect of a variation in one endogenous variable (any one) is therefore transmitted to employment in the same quarter. In the next quarter, it is carried on to the construction and capital functions which respond to lagged values of "outlay plus inventory change plus net foreign investment." This in turn produces a new increment in outlay and simultaneously, in the two consumption components. Thus, the system may be seen to magnify and transmit rapidly any variations in the values of constituent functions.

(2) *Multiplier Effects Associated with Government Expenditures.* Because the consumption of non-durables and services is a passive factor responding to changes in current outlay and to changes in government expenditures, the latter have a greater multiplier effect upon income and employment than do variations in any of the

other exogenous variables. From (v′) and (vii), it may be seen that a unit increment in government expenditures will have an impact upon current income almost twice (1.946) that of an equal increment in net foreign investment or inventories. By the same token, its influence upon income in the subsequent quarter must be correspondingly greater.

(3) *Autonomous Variations in the Endogenous Variables.* The functions to be considered here are those of construction and producers' durables. Concerning the former, in so far as it depends upon income, there will be no autonomous variation in its values. Independent variations could arise only from the interest factor or, as we have stressed, from the "capacity factor." The latter, the ratio of families to dwelling units, has not been introduced because it could not be ascertained empirically. In producers' durables, similarly, we have been unable to include the "autonomous" factor relating to excess capacity.

(4) *Income and Employment Fluctuations Associated with Changes in Durables Consumption.* The inclusion of what may be called a reinvestment element (d_{-19}) in the consumers' durables function gives rise to inherent fluctuations in the levels of outlay, income and employment. A unit variation in this element tends to produce a change in outlay 1.230 times as great. Significantly, the consumers' durables function is the only one which contains this inherent instability. Nevertheless, its instability permeates the entire system because of the influence of outlay upon nondurables and services consumption, construction, and capital accumulation.

TABLE I

ESTIMATED AND OBSERVED VALUES[a] OF ECONOMIC VARIABLES IN THE UNITED STATES: 1958–59

(Billions of 1954 Dollars, Seasonally Adjusted)

	Estimated Values					
	1958				1959	
	I	II	III	IV	I	II
Consumption of Non-Durables (C)	56.1	55.6	55.0	57.3	57.9	58.7
Consumption of Durables (D)	8.2	7.9	7.6	8.2	8.6	8.9
Construction (H)	8.4	7.7	6.3	8.1	8.6	8.9
Producers' Durables (G)	5.9	5.4	5.5	5.7	6.0	6.2
Inventory Change (J)	0.7	0.1	−0.8	−0.2	0.7	1.0
Income (Y)[b]	106.9	104.9	102.6	108.3	110.5	112.4
Employment (E) (Millions of workers)	64.3	63.9	63.5	64.6	65.0	65.4
	Observed Values					
	1958				1959	
	I	II	III	IV	I	II
Consumption of Non-Durables (C)	56.5	57.4	58.1	58.5	58.6	59.6
Consumption of Durables (D)	8.3	8.3	8.4	9.0	9.2	9.8
Construction (H)	8.0	7.8	8.0	8.4	8.9	9.2
Producers' Durables (G)	5.4	5.1	5.0	5.2	5.3	5.8
Inventory Change (J)	−1.6	−1.3	−0.8	0.2	1.4	2.3
Government (P)	27.0	27.8	28.5	29.1	28.8	29.0
Net Foreign Investment (F)	0.5	0.3	0.4	0	−0.2	−0.4
Income (Y)[b]	103.8	105.1	107.3	110.2	111.9	115.2
Employment (E) (millions of workers)	64.0	63.8	64.0	64.8	64.4	65.9

[a] Observed values have been determined from those given in the *Survey of Current Business*, July and September, 1959.
[b] Gross National Product plus Transfer Incomes.

V. AN EMPIRICAL TEST OF THE MODEL AND A PREDICTION—1958 AND 1959

(1) *The Test of the Model.* The functions of the econometric model which has been constructed were purposely based upon the post-war period ending with the fourth quarter of 1957. This allowed the testing of the predictive power of the system in 1958 and the first and second quarters of 1959. The observed values, together with the values calculated by application of the relationships of the system, appear in Table I below.

The correspondence between estimated and observed values of employment and income is very close indeed. The average deviation of estimated values of employment from actual values is less than one percent; for income, the average deviation is 2.2 percent.

The model tends to give exaggerated values for producers' durables during the test period. It seems that the "capacity factor" discussed in detail earlier has come to bear a restrictive influence. That is, excess productive capacity has in fact introduced a negative coefficient for the "capacity factor" of the producers' durables function. To the extent that capacity remains in excess and affects businessmen's expenditure plans for new plant and equipment, the producers' durables function of the model will seemingly overestimate quarterly outlays on these goods.

In the case of consumer durables, the predicted values are less than actual values by an average amount of 8 percent.

(2) *Prediction of Economic Variables for 1959–60.* Since the functions of the model depend upon observed values occurring one quarter earlier, predictions can be made only one quarter in advance. If one wishes to predict further into the future, specific values must be assigned to the exogenous variables of net foreign investment, government expenditures, and inventory change. Net foreign investment plays a minor role in the American economy and so was easily handled. Government expenditures could be estimated after a thorough consideration of the President's budget proposals and of estimates of expenditures by state and local governments. Unfortunately, values of inventory change could not be determined directly since there was no way of estimating profits five quarters in the future. Consequently, recalling that the stock of inventories tends to adjust to the quarterly level of income and noting an increase in income ($X + P$) of 6.5 for the five quarters period, a quarterly value of 1.3 was assigned.

Using these estimates of the exogenous variables in the relationships of the model, the predicted values of Table 2 were determined.

TABLE II

ESTIMATED QUARTERLY VALUES OF ECONOMIC VARIABLES IN THE UNITED STATES: 1959–60

(Billions of 1954 Dollars, Seasonally Adjusted)

Variables	1959		1960		
	III	IV	I	II	III
Consumption of Non-Durables (C)	58.9	59.5	60.1	60.8	61.1
Consumption of Durables (D)	9.0	9.5	9.8	10.1	9.7
Construction (H)	8.8	8.8	9.0	9.2	9.3
Producers' Durables (G)	6.2	6.2	6.3	6.4	6.6
Inventory Change (J)	1.3	1.3	1.3	1.3	1.3
Government (P)	29.3	29.6	29.9	30.2	30.5
Net Foreign Investment (F)	0	0	0	0	0
Income (Y)	113.6	115.0	116.4	118.1	118.8
(Millions of Workers, Seasonally Adjusted)					
Employment (E)	65.6	65.9	66.1	66.5	66.6
(Billions of 1959 Dollars, Seasonally Adjusted, Annual Rates)					
Gross National Product	482.8	489.2	491.2	502.8	506.0

VI. CONCLUSIONS

The following conclusions may be deduced from our analysis: (1) the American economy has been found to be inherently unstable because of its rapid and pervasive response to changes in major variables. Variations in the values of one sector are quickly transmitted to all others and the magnified impulse comes to rest finally upon employment. (2) Income exhibits both a growth and a cyclical tendency. During the 1947–57 period and in the absence of a Juglar cycle, it is our concerted opinion that the chief cyclical variation has originated with spending upon consumers' durables. Thus, our model would have allowed the

accurate prediction of not only the downturn in 1958 but also the upturn in 1959, both of which we attribute to swings in consumers' durables buying. Moreover, on the basis of the model, we can now predict continued economic upswing in 1960 as high level purchases of consumers' durables continue. Further, although we have not included any numerical estimates so far into the future, our model suggests a reduction in the demand for consumers' durables in 1961 which will have an adverse effect upon general business activity. (3) The possibility of a major (Juglar) downturn cannot be ruled out. At the same time, our model, based as it is upon the 1947–57 period in which no major variations appeared, provides no advance notice of such a turn. Only when we are able to assign values to the variables, "excess capacity" and "vacancy ratio," and can incorporate these magnitudes in our functions will the prediction of Juglar fluctuations be feasible.

WHY CONTROL TIME DEPOSITS?[1]

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I. THE PROBLEM

Social scientists have recurrently called attention to the prevalence of a cultural lag in the adaptation of social institutions to changing conditions and ideas. Central-banking institutions appear to be no exception to this observation. Referring specifically to the set of instruments of control at the disposal of the United States Federal Reserve System, Professor Milton Friedman has aptly observed, "The tools we now have are in large measure an accidental outgrowth of past history and by no means those best suited to present day needs."[2]

This paper will examine the case for the continued existence of the two principal tools of Federal Reserve control over the time-deposit operations of commercial banks. One of these instruments, dating back to the original Federal Reserve Act, is a cash-reserve requirement against time deposits in member banks. This requirement, currently at the level of 5% of time deposits, is subject to variation by the Board of Governors of the Federal Reserve System between a minimum statutory level of 3% and a maximum statutory level of 6% of time deposits. The other instrument, in existence since the Banking Act of 1933, is the legal obligation of the Board to limit by regulation the rates of interest that may be paid by member banks on time deposits. Since the Banking Act of 1935, the interest-rate limits set by the Board are also applicable to time deposits in non-member commercial banks insured by the Federal Deposit Insurance Corporation.

As suggested elsewhere, several developments have heightened the need for reconsidering the control of commercial-bank time deposits.[3] In the first place, recent theoretical discussion reconfirms the thesis that it is in their demand-deposit, rather than time-deposit, operations that commercial banks differ fundamentally from other financial institutions. Accordingly, it is their demand-deposit, and not their time-deposit, activities which, in principle, warrant the singling out of commercial banks from among all financial institutions for centralized control by the monetary authority.

Secondly, mutual savings banks, whose activities are closely akin to the time-deposit operations of commercial banks, have all but unanimously persisted in their abstention from joining the Federal Reserve System. Thus, though eligible for membership, mutual savings banks have found it to their decided advantage to stay out of the Federal Reserve System.

Thirdly, and in harmony with the previous point, empirical evidence for the period 1929–1952 indicates that it is time-deposit, rather than demand-deposit, operations that have restrained the growth of commercial banks relative to all other financial institutions. Commercial banks appear to have been at a distinct disadvantage in the competition for time-deposit business.

There arises, therefore, the question as to what considerations there are that militate against removal of the control over commercial-bank time deposits, in spite of the theoretical and empirical grounds for such removal implied in the foregoing three points. This question has become all the more timely now that the Federal Reserve Board has once again come forward with a plan for revising member-bank reserve requirements, including explicit refusal to recommend any change whatever in the reserve requirement against time deposits.[4]

The following four sections examine, in turn, four major arguments that have been advanced in support of central-bank control over commercial-bank time deposits.

[1] The author is indebted to Professors G. Heberton Evans, Jr., and Ezra Solomon for helpful suggestions.

[2] Milton Friedman, "Consumer Credit Control as an Instrument of Stabilization Policy," in Board of Governors of the Federal Reserve System, *Consumer Instalment Credit*, Part II, Vol. 2: *Conference on Regulation* (Washington: U. S. Government Printing Office, 1957), p. 100.

[3] Joseph Aschheim, "Commercial Banks and Financial Intermediaries: Fallacies and Policy Implications," *Journal of Political Economy*, February, 1959, LXVII, pp. 59–71.

[4] "Proposed Revision of Reserve Requirements," *Federal Reserve Bulletin*, April, 1959, XLV, p. 376.

II. THE DEFINITIONAL ARGUMENT

There seems to be a swift method of terminating any discussion of the rationale for the control of commercial-bank time deposits even before such discussion has begun. The method is to define time deposits in commercial banks as money. Manifestly, once it is assumed that commercial-bank time deposits are money, the issue of central-bank control is settled. On widely accepted economic grounds, control over the supply of money in all its forms must be vested in a monetary authority. Thus, if time deposits are defined as money, not only is the issue of central-bank control settled; it does not even arise.

Though this appears to be an easy, as well as swift, way out of the discussion, it also happens to be a faulty way out. For even if time deposits in commercial banks are defined as money, the question remains whether such deposits are not more nearly similar to other financial institutions' liabilities, not defined as money, than to currency or demand deposits. Thus, from an economic—rather than semantic or legal viewpoint—the definition of commercial-bank time deposits as "money," "near-money" or "non-money" cannot be settled arbitrarily or as a matter of personal predilection. Rather, the definition of such deposits must itself be the result of a consideration of the economic character of these deposits in comparison with certain other deposit liabilities. And the economic character of these deposits may vary markedly from one economy to another, and even in the same economy from one period to another.

A necessary, and sufficient, condition for monetary status of a given object is that it be widely accepted as a means of payment. This condition is, in the contemporary American economy, met by currency and by demand deposits, but is not met by time deposits in commercial banks or in any other financial institution. Should a run-of-the-mill owner of a time deposit in a commercial bank seek to make payment out of his time deposit, he would find himself making the payment by means of currency or check-book money or a combination of the two. Thus, before the time-deposit owner made the payment, there would take place a conversion—in the amount to be withdrawn—from his time deposit into currency or into a demand deposit. If it were commonly possible, as it is in present-day Canada, to make payment by drawing checks against time deposits, time deposits (or that portion thereof subject to withdrawal by check) would constitute money.[8] In the contemporary United States economy, however, time deposits are not a widely accepted means of payment, and, therefore, are not money.

Yet, with reference to the United States, a considerable number of economists have, in fact, defined commercial-bank time deposits as money. Thus, in his comprehensive study, "Monetary Velocity in the United States," R. T. Selden enumerates 17, out of a total of 38, published income-velocity series whose authors included time deposits in their definition of money.[9] Selden contributes his own series, and himself defines money to include time deposits. He explains his decision as follows:

> By all odds the main issue in the definition of money for V_y (i.e., income-velocity) ratios is whether or not it should include time deposits as well as currency and demand deposits. Analytically it makes little difference how one treats time deposits. If excluded, they must be brought into the analysis as close money substitutes. One cannot ignore time deposits in any case.
>
> Empirically, however, there is a strong case for inclusion of these deposits. (1) Prior to 1892 data for demand deposits alone do not exist; estimates of V_y before this date necessarily include time deposits in money. (2) The present system of differential reserve requirements for demand and time deposits at member banks did not begin until 1917. Classifications of deposits are particularly suspect for the period 1892–1917, since precise classification did not have the significance to bankers and depositors then that it had more recently. (3) Since 1917 there have been shifts between demand and time deposits because of changes in conditions attached to each type of deposit. The reasons for including time deposits in money are particularly compelling for study of long-run trends. Hence the

[8] Some might prefer to say that Canadian savings deposits are money because they are, in practice, interest-bearing demand deposits. The two formulations amount to the same result. Whether we refer to them by their legal title, savings deposits, or by the alternative designation, interest-bearing demand deposits, such Canadian deposits are money because they are widely accepted as a means of payment.

[9] Richard T. Selden, "Monetary Velocity in the United States," in Milton Friedman (ed.), *Studies in the Quantity Theory of Money* (Chicago: University of Chicago Press, 1956), pp. 179–257.

analysis ... deals exclusively with V_p measures so defined.[7]

It is noteworthy that Selden's, as well as the other economists', generic definition encompasses not only time deposits in commercial banks, but all time deposits, including time deposits in mutual savings banks. If such a definition of money were adopted today, share accounts in savings and loan associations would, by the same token, qualify for inclusion under "money" and, therefore, under central-bank control. For share accounts in savings and loan associations are more nearly similar to time deposits in commercial and savings banks than demand deposits are to time deposits. Neither time deposits in banks nor share accounts in savings and loan associations are used as part of the circulating medium; but demand deposits are. This single ground for dichotomizing between demand deposits, on the one hand, and all other financial liabilities, on the other hand, is sufficient to debar the latter from monetary status.

As the above quotation from Selden points up, the case for the broader definition of money is "empirical," i.e., historical. For the study of long-term trends extending into American economic history prior to the Banking Act of 1933, the present-day clarity of the distinction between demand deposits and time deposits did not exist.

III. THE "PRACTICAL" ARGUMENT

Thus far this paper has concluded merely that the acknowledged theoretical basis for the control of demand deposits does not extend to commercial-bank time deposits. From this limited conclusion it was not inferred that the existing central-bank control over commercial-bank time deposits should be removed. Such an inference would have been a *non sequitur*: from the distinctive character of demand deposits among the liabilities of private financial institutions, it does not necessarily follow that commercial bank time deposits should be decontrolled. Granting that demand deposits must be subject to central-bank control, there may be a tenable case for concomitant control of commercial-bank time deposits, insofar as *effective* control of the former hinges upon simultaneous control of the latter. Alternatively stated, there may be *practical* reasons why it would be difficult to constrain the demand-deposit operations of commercial banks without also constraining their time-deposit operations. And indeed the literature includes important discussion in this vein.

In his *Treatise on Money*, Keynes expressed the view that there was a practical case for the control of commercial-bank time deposits. Referring to the exemption of commercial-bank time deposits from a cash reserve requirement, Keynes stated,

> The practical argument against this course, and even against allowing a lower reserve ratio for deposit accounts than for current accounts, is the risk of encouraging banks to make private arrangements with, and concessions to, their customers, by which what were really Cash-deposits, would masquerade as Savings-deposits, and so avoid the necessity of providing a reserve. It is stated that this evasion has in fact occurred to a certain extent in the United States.[8]

It is certainly true that during the 1920's and early 1930's, Federal Reserve authorities,[9] as well as individual scholars,[10] were calling attention to sizable evasion of the higher reserve requirement against demand deposits by means of commercial-bank inducement of customers to shift deposits from the demand to the time category. For example, according to a Federal Reserve report at the time, commercial banks in certain localities had devised a special savings account on which checks could be drawn by the depositor.[11] Concern over such practices, as reflected in the "practical" argument, gave rise to a suggestion more drastic than that of mere retention of the already existing reserve requirement against time deposits. The suggestion was that the reserve requirement against time deposits

[7] *Ibid.*, p. 237.

[8] John Maynard Keynes, *Treatise on Money* (New York: Harcourt, Brace and Co., 1930), Volume II, pp. 13–14.

[9] See "Member Reserves—Report of the Committee on Bank Reserves of the Federal Reserve System" in the Federal Reserve Board, *Annual Report for 1932* (Washington: U. S. Government Printing Office, 1933), pp. 271–274.

[10] See Keynes's reference (*op. cit.*, p. 17) to Parker Willis, "Great Changes in American Banking," *The Banker* (May, 1927), p. 385. See also Robert G. Rodkey, *Legal Reserves in American Banking* (Ann Arbor: University of Michigan, 1934), pp. 70–71.

[11] Federal Reserve Board, *Annual Report for 1932*, *op. cit.*, pp. 272–273.

"should be fixed at the same figure named for individual demand deposits in order to eliminate the temptation for evasions."[18]

Thus, Keynes's "practical" argument was closely attuned to the contemporaneous American scene. But how valid and how relevant is this argument?

A shift in a commercial bank's deposits from the demand to the time category has two effects that work in opposite directions. On the one hand—and this is the effect stressed in the "practical argument"—such a shift provides the bank with the benefit of an increased lending capacity in consequence of the lower reserve requirement against time deposits.[19] On the other hand—and this effect is either only implied or else completely ignored in the practical argument—a shift of deposits confronts the bank with the cost of higher interest-rate payments on time deposits than on demand deposits.

Hence, not under all circumstances will it be profitable for a commercial bank to experience a shift of its deposits from the demand to the time category. To render such a shift profitable, the benefit to the bank from the lower reserve requirement against time deposits must not be offset by the cost to the bank from the higher interest-rate payments on these deposits.

Now during the 1920's it was, indeed, profitable for a commercial bank to induce a shift of deposits from the demand to the time category (particularly in metropolitan areas with relatively high reserve-requirement differentials as compared with country banks). Since 1933, however, the situation has been reversed: it would be clearly unprofitable for a commercial bank to induce its depositors to shift deposits from the demand to the time category.

This reversal is largely due to the fact that in the 1920's commercial banks were generally paying interest on demand deposits, whereas since 1933 this practice has been prohibited. The payment of interest on demand deposits meant that many a commercial bank found that the benefit of the reserve-requirement differential exceeded the cost of the interest-rate differential. But with the effective ban of interest payment on demand deposits since 1933, a bank would have to be actively interested in renouncing profit opportunities in order to induce its customers to shift deposits from the demand to the time category. This can be made clear by the following illustration, which substantially understates the contemporary empirical situation.

Assume that commercial banks are subject to a cash-reserve requirement of 20% against demand deposits, but to no reserve requirement whatever against time deposits. Also assume that commercial banks pay no interest on demand deposits, but do pay interest at 1.5% per annum on time deposits. Now if a customer in a commercial bank shifted $1,000 from his demand deposit to a time deposit, the bank would have to pay him $15 in interest for the first year. On the other hand, the increase in its excess reserves—and, therefore, in its lending capacity—as a result of the deposit shift would amount to only $200. The bank would have to earn an interest rate of 15/200 = 7.5% per annum to break even on this operation. Bearing in mind the likelihood of bank expenses for servicing loans, the rate of interest that would make the shift of deposits within a bank profitable to it is patently above the rates applicable to the great bulk of commercial-bank assets over the last generation, including the more recent periods of restrictive monetary policy. Since prohibition of the payment of interest on demand deposits and the subsequent proliferation of the practice of service charges on such deposits, it is no longer tempting to a commercial bank to engage in deposit reclassification.

As previously noted, the foregoing illustration understated the unprofitability of deposit reclassification to a commercial bank in contemporary conditions. The understatement was particularly significant in one respect: the assumption of no reserve requirement whatever

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[18] Rodkey, *op. cit.*, p. 100.

[19] The maximum possible expansion in the lending capacity of the entire commercial banking system is, of course, a multiple of the increase in the lending capacity of the individual commercial bank. In the United States the individual commercial bank does not constitute the commercial banking system. Furthermore, in the United States the monetary authority can offset any expansion in the lending capacity of the commercial banking system deemed to be undesirable. This power of the monetary authority does not, however, detract from the "practical" argument, because that argument deals with the incentive for deposit reclassification facing the individual commercial bank. Accordingly, the analysis in the text also deals with the incentive for deposit reclassification facing the individual commercial bank.

against time deposits. This assumption was chosen so as not only to highlight actual conditions in recent years but also to illustrate the hypothetical situation of no central-bank control over commercial-bank time deposits. Thus, even with no reserve requirement against time deposits and with a reserve requirement as high as 20% against demand deposits, together with an interest-rate differential of only 1.5%, deposit reclassification by a commercial bank is still not rendered profitable.

What, then, is the applicability and what is the validity of the "practical" argument against removal of the reserve requirement for time deposits?

Certainly since 1933 the "practical" argument has been anything but practical. Indeed, the argument would not even be practical if, as assumed in the illustration above, central bank control over commercial-bank time deposits were removed. In other words, the "practical argument" is plainly invalid. Through an appropriate exercise of central-bank control over demand deposits it is always possible to render the "practical" argument impractical, i.e., to make the reclassification of deposits unprofitable from the viewpoint of a commercial bank. First, it is possible to invoke the prohibition of interest payment on demand deposits. Next, if the first measure is not entirely adequate, it is possible to lower reserve requirements against demand deposits. The first measure or the two measures in conjunction will suffice to remove the incentive for the individual commercial bank to seek deposit reclassification.

Thus, from this point on, assume that payment of interest on demand deposits has been effectively prohibited. In that event, as already observed, so long as the interest-rate differential between time deposits and demand deposits is 1.5 percentage points or higher, the reserve-requirement differential could be as high as 20 percentage points before deposit reclassification were likely to appear attractive to a commercial bank. If the interest-rate differential were as low as one percentage point, a reserve requirement differential of 13 percentage points would probably be more than adequate to render deposit reclassification by a commercial bank unprofitable. (And a reserve requirement differential of 13 percentage points is still in excess of the present differential in the United States.) It becomes, of course, pointless to contemplate interest-rate differentials considerably below 1%. Though they are entirely possible, such low differentials would reflect so clear an apathy on the part of commercial banks to time deposits, as to render any discussion of deposit reclassification under those conditions nugatory.

It is the very relevance of the "practical" argument to the 1920's which exemplifies its invalidity as a basis for continuing the control by the central bank over commercial-bank time deposits. No sooner was payment of interest on demand deposits prohibited by the Banking Act of 1933, the "practical" argument was rendered impractical.

Yet, like the individuals composing them, social institutions tend to over-react to an evil once they recognize it. The same Banking Act of 1933, which banned the payment of interest on demand deposits without abolishing the reserve requirement against them, also obligated the Federal Reserve Board to set limits to interest rates payable by commercial banks on time deposits. As the Board itself has noted, legislative history suggests that a primary objective of the provisions "was to prevent unsound practices in competition for time and savings deposits."[14] Thus in over-reacting to the 1920's, the Banking Act of 1933 reinforced Federal Reserve control over commercial-bank time deposits at the very point that one of its other provisions (the prohibition of interest payments on demand deposits) made Federal Reserve control over time deposits redundant.

The implications of this redundancy are clearly illustrated by the 1957 increase in the maximum permissible interest rate on time deposits from the 1933 level of 2.5 per cent to 3.0 per cent. In explaining its decision to raise the maximum permissible interest rates on time deposits, the Federal Reserve Board stated, "in a period of heavy demands for funds and a relatively high structure of interest rates generally, it would be desirable to permit individual member banks greater flexibility to encourage the accumulation of savings than was available under the existing maximum permissible rates. It also appeared to the Board that there was insufficient reason to prevent banks, in the exercise of management discretion, from competing actively for time and savings balances by offering rates

[14] Board of Governors of the Federal Reserve System, *Annual Report for 1956* (Washington, 1957), pp. 52–53.

more nearly in line with other market rates."[15] Thus, the Board itself concedes that no sooner do the limits which it has set becomes effective (i.e., begin to hold down rates on time deposits below what they would otherwise be), it is inclined to raise them!

One can scarcely blame the one dissenting Board member for observing, "If the ceiling should be raised whenever a few banks feel they can afford to pay higher rates, there is no point in having a ceiling."[16] The idea needs no further belaboring: the Federal Reserve's power over interest rates on time deposit is—to apply Professor Friedman's apt description—"an accidental outgrowth of past history and by no means . . . best suited to present-day needs."

IV. THE "VELOCITY" ARGUMENT

Over the last three decades the Federal Reserve System has published three comprehensive plans for revision of member-bank reserve requirements: in 1931, 1948, and 1959. The latter two are essentially similar in their treatment of requirements against time deposits in that both explicitly suggest that no change be made in the existing character of these requirements. Both of these plans have relatively little to say by way of explanation of their support of the *status quo*.

The full statement in the 1948 plan is the following:

> There is substantial agreement that time—or at least savings—deposits should be treated separately. Such deposits are not, strictly speaking, a means of payment, but they perform other functions of money, such as being a store of value. For practical reasons the existing reserve requirements on time deposits ought to be retained as the basic requirements under the proposed plan.[17]

Enough has been said in Section II above concerning the non-monetary nature of time deposits to require no further elaboration. One could only wonder whether the unspecified "practical reasons" are anything more than the "practical" argument adduced by Keynes and others. But this will have to be left to the reader's own surmise.

Hardly more illuminating is the statement in the 1959 plan, which runs as follows:

> No change is recommended by the Board in permissible requirements against time deposits from the present range of 3 to 6 per cent. It is recognized that savings deposits in banks do not need to have as high requirements as demand deposits, which comprise the most active elements of the money supply, and the low correctly provides for differentials in such requirements. In the opinion of the Board, the present limits on requirements against time deposits are about as low as would be warranted for sound and effective operation of the banking system.[18]

In light of Section II of this paper, the present limits on requirements against time deposits appear to have imparted neither soundness nor effectiveness to the operation of the banking system.

By contrast, the 1931 plan included a scheme for a fundamental reconstitution of reserve requirements against time deposits.[19] This scheme was a logically integral part of the overall plan, which also called for a fundamental reconstitution of reserve requirements against demand deposits. Though reflecting some conditions of the 1920's that have since changed radically, the plan remains a sufficiently noteworthy contribution to the subject of monetary controls to merit attention in this connection.

The 1931 plan revolved around two central themes. One was that cash-reserve requirements should be geared not only to the volume of deposits held by individual member banks but also to the activity, or velocity, of these deposits. The second theme was that "member banks, because of the low reserve against time deposits, have been induced to classify as time deposits, deposits that are essentially demand in character."[20] The development of these two themes was followed by recommendations. It was recommended that the classification of deposits into time and demand, should be abolished. It was further recommended that the reserve require-

[15] *Ibid.*, p. 53.
[16] *Ibid.*, p. 54.
[17] Statement of Karl R. Bopp, in Joint Committee on the Economic Report, *Credit Policies: Hearings*, 80th Congress, 2nd Session, April and May 1948 (Washington: U. S. Government Printing Office, 1948), p. 144.
[18] "Proposed Revision of Reserve Requirements," *Federal Reserve Bulletin*, *op. cit.*
[19] "Member Bank Reserves—Report of the Committee on Bank Reserves of the Federal Reserve System," in Federal Reserve Board, *Annual Report for 1932*, *op. cit.*
[20] *Ibid.*, p. 272.

TABLE I

TURNOVER OF BANK DEPOSITS AND OF SHARE ACCOUNTS IN SAVINGS AND LOAN ASSOCIATIONS (TIMES PER YEAR)

Year	Demand Deposits in Commercial Banks	Time Deposits in Commercial Banks	Deposits in Mutual Savings Banks	Share Accounts
1945	19.8	.50	.20	.19
1946	20.3	.60	.26	.25
1947	20.4	.56	.26	.24
1948	21.4	.51	.26	.26
1949	21.4	.45	.26	.25
1950	23.5	.48	.28	.29
1951	24.4	.46	.27	.29
1952	25.4	.46	.25	.27
1953	26.8	.46	.25	.28
1954	29.6	.46	.25	.27
1955	30.2	.47	.27	.29

Source: Economic Policy Commission, American Bankers Association, *Member Bank Reserve Requirements* (New York, 1957), p. 122.

ment against all deposits should be equivalent to a certain percentage of total deposits plus a certain percentage of the average daily debits to deposit accounts.

Now though the second theme has been shown in Section III above to be no longer relevant, the question remains whether deposit velocity should not serve as a criterion for reserve requirements against all deposits regardless of their formal classification. The 1931 plan argued that,

> Since the volume of member bank credit needed to meet the legitimate needs of trade and industry depends on the rate at which credit is being used as well as on its aggregate amount, it is essential for the exercise of a sound control that legal requirements differentiate in operation between highly active deposits and deposits of a less active character.[31]

What matters, therefore, is not the formal classification of deposits but their actual velocity. Accordingly, the mere fact that certain bank deposits are time deposits constitutes no ground for freeing such deposits from central-bank control.

How valid is this argument?

Manifestly, it is a truism that the impact of bank credit on the economic situation at any given time depends not only on the volume of such credit but also on the rate of its use. From this truism, however, it does not follow that member-bank reserve requirements should be made to apply to time deposits or even that reserve requirements should be geared to the rate of use of demand deposits.

So far as the idea of linking reserve requirements to the velocity of demand deposits is concerned, the 1948 plan provides some strong arguments for its rejection. In order to take into account the rate of use of demand deposits in the reserve requirements themselves,

> ... it would be necessary to identify either deposits or debits to deposit accounts, or both, in terms of the economic activities ... [for which the payments out of the deposits are used] ... If deposits were chosen, it would be necessary to classify them, not on the basis of present ownership, but on the basis of intended expenditures—a hopeless prospect. If, on the other hand, debits were chosen, discriminatory requirements could be avoided by shifting to cash transactions, by means of 'clearing arrangements,' and by other devices. It is virtually impossible to devise a comprehensive system of classification which would be administratively feasible.[32]

While the foregoing feasibility objections against the velocity proposal are strong enough, they can be buttressed by a more fundamental objection. Control by the central bank over the quantity of demand deposits can, in any event, be used as counteraction to variations in deposit velocity that are deemed to be undesirable by the monetary authority. Therefore, why should there be adopted a scheme of reserve requirements with weighty problems of administrative feasibility when the monetary authority already has the capacity to accomplish the avowed objective of this scheme?

Finally, regarding the application of the velocity-reserve scheme to time deposits, two points are in order. In the first place, the turn-over rate of commercial-bank time deposits is but a tiny fraction of that of demand deposits. As shown in Table 1, the former rate has, in recent years, been approximately 2% of the latter. By contrast, the turnover rate of commercial-bank time deposits has been very much closer to that of savings-bank deposits and savings-and-loan share accounts. Thus, if member-bank reserve requirements were geared only to the turnover

[31] *Ibid.*, p. 261.

[32] Statement by Karl R. Bopp, *op. cit.*, p. 144.

rate of deposits, the inclusion or exclusion of time deposits would make so trivial a difference for the great majority of member banks, as to be hardly worth discussion. It is, therefore, quite understandable that even the 1931 plan—its references to the "considerable" turnover of commercial-bank time deposits in the 1920's notwithstanding—stipulated that the formula for member-bank reserve requirements should not be geared to deposit velocity alone. Rather, the formula was to include, in addition to the velocity consideration, the provision of a reserve equivalent to 5 per cent of all net deposits. Only by means of this provision for an undiscriminating, flat-rate treatment of demand and time deposits could the vast difference in the respective velocities of demand and time deposits be swamped in a reserve plan distinctive for its emphasis on deposit velocity!

Secondly, the great dissimilarity between the respective velocities of demand and time deposits is itself only a manifestation of the basic difference between the two types of deposits: a difference of kind rather than of degree. Whereas demand deposits are a widely accepted means of payment, time deposits are not. This fundamental difference did not become indubitably clear till the prohibition of interest payment on demand deposits in 1933: about two years after presentation of the velocity reserve proposal. It is to the lasting credit of this proposal that the arguments for it, as expressed in the 1931 plan, helped to bring about the 1933 clarification of the dichotomy between demand deposits and time deposits.

V. THE "VAULT-CASH" ARGUMENT

There remains one further argument against the complete removal of the cash-reserve requirement applicable to member-bank time deposits. Two features distinguish the appearance of this argument from that of the other arguments already considered: its novelty, and its authorship. The argument in question appeared in 1957 in a detailed study, *Member Bank Reserve Requirements*, by the Economic Policy Commission of the American Bankers Association. Apart from these features of its appearance —which some may regard as sufficient grounds for scrutinizing it—the argument merits attention for the negative reason that it would not have been made in the first place if extensive treatment had been given in past economic literature to a basic question in this context. The question is this: how are commercial banks to administer their assets with one kind of their activity exempt, and the other kind—not exempt, from central-bank control?

The first and most obvious answer is continuance of the prevailing pattern: segregation of deposits into the two major categories of demand and time, but a pooling of assets held against time deposits with assets held against demand deposits. This is the answer taken for granted in the study of the American Bankers association.

While it rejects the reserve requirement against member-bank time deposits as a tool of monetary control, the ABA finds that "There is one valid argument against *complete exemption* of time deposits from reserve requirements."[23] This argument ties in with the treatment of member-bank vault cash as proposed by the ABA and, still more recently, by the Federal Reserve Board. The proposal is that member banks be permitted to count vault cash as part of their required reserves. Now the ABA argues that if this proposal were adopted, the exemption of time deposits from a reserve requirement "would not be completely logical."[24] For insofar as member banks maintain vault cash to meet withdrawals of time deposits, the exemption of time deposits "would give a certain amount of competitive advantage to banks having a large percentage of savings deposits."[25]

The "vault-cash" argument is simply a reflection of the fact that the present conduct of time-deposit operations of commercial banks is unnecessarily encumbered with central-bank control over demand-deposit operations. This argument is rendered pointless under an alternative to the prevailing administration of commercial-bank assets.

One alternative would be to permit no bank to engage both in demand-deposit and in time-deposit operations. Accordingly, commercial banks would be compelled to divest themselves of their time deposits or else become savings banks. Such a solution would be analogous to a hypothetical requirement that the thousands of American drug stores be permitted to sell

[23] Economic Policy Commission, American Bankers Association, *Member Bank Reserve Requirements* (New York, 1957), p. 148.
[24] *Ibid.*
[25] *Ibid.*

only drugs on the ground that the sale of drugs to the public must remain governmentally controlled in a manner not applicable to the sale of soft drinks or ball-point pens. This would be a clearly illogical approach. There is no more of an inherent conflict in the conduct of demand-deposit and of time-deposit operations on the same premises than there is in the selling of drugs and soft drinks on the same premises. Moreover, since many customers have found it a matter of considerable convenience to patronize establishments such as commercial banks and drug stores, offering diverse products within the same walls, it would be to the distinct disadvantage of the public to have such enterprises broken up. Thus, though the exclusion of commercial banks from time-deposit operations would render the "vault-cash" argument completely impertinent, this solution does not seem to be an alternative that is preferable to the prevailing treatment of time-deposit operations.

Another alternative, however, is available. This alternative would permit commercial banks to continue their activity in time-deposit, as well as demand-deposit, operations. In addition, this alternative would constitute full recognition of the non-monetary character of time deposits, in line with Keynes's dictum in his *Treatise on Money* that "a system is to be welcomed which encourages as strict a segregation as possible between savings deposits and cash deposits."[20] This segregation would include not only the commonly practised separation of time-deposit from demand-deposit liabilities, but also the separation of assets held against time-deposit liabilities from assets held against demand-deposit liabilities. Such segregation would free the time-deposit operations of commercial banks from encumbrances, such as the "vault-cash" argument, resulting from central-bank control of demand-deposit operations. Such segregation would also permit the clear and unobstructed control of demand-deposit operations by all appropriate means. Instances of such segregation are readily available within the contemporary United States. In the systems of state-chartered banks of at least two states, Connecticut and Massachusetts, there is a segregation of assets, as well as liabilities, into a commercial department and a savings department. Here then is an invitation to the national government to follow the example of "segregationist" states!

[20] Keynes, *op. cit.*, p. 17.

VI. CONCLUDING COMMENT

From none of the conclusions of this paper does it follow that the role of commercial-bank time deposits as close money substitutes ought to be ignored by the monetary authority. What these conclusions do imply is that so long as the monetary authority has control over the circulating medium, it can offset or enhance effects of the behavior of close money substitutes. To offset or enhance effects of the behavior of close money substitutes is, of course, anything but to ignore them.

ROLPH ON THE AGGREGATE EFFECTS OF A GENERAL EXCISE TAX*

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In his recent stimulating and provocative analysis of the fiscal aspects of taxation, Rolph has stressed the deflationary property of a general and uniform excise tax.[1] In sum, he argues that under competitive pricing conditions, sellers cannot arbitrarily raise prices when an excise tax is levied. Instead, each firm has an incentive to reduce output as the tax lowers the "net" prices of products. Thus there is a corresponding reduction in the demand for hired resources. Given government expenditures, the distribution of income and assets, and assuming full employment of a given quantity of resources, Rolph concludes that factor owners are forced to take a lower price for their services "and hence the money income of owners are proportionately reduced."[2] Thus, according to Rolph, a system of general and uniform excise taxes in an economy with flexible factor prices, (1) leaves the level and composition of output unchanged, (2) does not raise product prices, but (3) does proportionately reduce the money income of all resource owners.

Developing his analysis via a hypothetical arithmetic example, Rolph demonstrates the deflationary characteristics of a general excise tax, which "by reducing money incomes of private groups,. . . *ceteris paribus*, reduces private demand."[3] If prior to the tax levy the government budget was balanced, Rolph argues that the surplus created by the tax receipts *lowers prices*.[4] He concludes, however, that "in real terms, there is no change in the private take from the economy . . . which follows from the assumption that government expenditures remain unchanged and *the supply of resources remain constant*."[5]

This is truly an interesting and, if valid, surprising result even for a world of pure competition. It implies constant employment of all resources independent of factor returns, i.e., that all factor supply functions are, in real terms, perfectly inelastic. This last implication, it should be emphasized, is but an assumption of Rolph's, *not a condition of pure competition*. Once upward sloping factor supply schedules are permitted, then it can be demonstrated that any deflationary effect of a general excise tax will have an employment and output incidence as well as a price effect.[6]

Before outlining this output-employment effect, however, it might be well to probe further for what seem to be additional, and, I think, unrealistic aspects of the Rolphian system. For one thing, he argues that the imposition of a general excise tax will fail to affect the composition of output or the nature of the product mix. Thus, following this simplification of his analysis, we may assume the production of a composite commodity. Due to the fall in factor prices after the imposition of the tax, the price of this commodity will not rise; nevertheless, if the government budget was initially balanced and if the tax proceeds are not spent, then, according to Rolph, the equilibrium price after the tax levy will fall as demand proceeds (taken through a reduction in factor incomes) are reduced.

Let us outline the basic scheme of Rolph's argument. The following symbols can facilitate the presentation. We shall want to examine phenomena before and after the tax; hence, subscript b refers to the post-tax equilibrium situation, while subscript a refers to the pre-tax position.

* The author is indebted to Sidney Weintraub and C. Harry Kahn for many helpful comments on an earlier draft of this paper.

[1] E. Rolph, *Theory of Fiscal Economics* (Berkeley: University of California Press, 1954), Ch. 56.

[2] *Ibid.*, p. 129. Rolph notes, however, that fixed income recipients are left in the same money and real position by a general excise tax, implying no change in product prices.

[3] *Ibid.*, pp. 131–132.

[4] *Ibid.*, p. 131. This implies that rentiers improve their real income position, contrary to Rolph's other statements on pp. 129, 132.

[5] *Ibid.*, p. 131. Italics mine. Yet if prices decline while government money expenditures are constant, then the government "take" must increase.

[6] Cf. J. M. Keynes, *The General Theory of Employment, Interest, and Money* (New York: Harcourt, Brace & Co., 1936), Ch. 20.

P —product price
Q —output quantity
Z —total sales proceeds $= PQ$
Z^*—total receipts accruing to firms $= W + C$
W —total money wage bill
C —gross capitalist income including depreciation
D —total money expenditures
y —fraction of sales proceeds turned over to government as excise tax revenue where $(0 < y < 1)$
x —fractional fall in market prices after the imposition of the tax (where $0 \leq x$ $1 <$)

The following six conditions are imposed, according to Rolph:

$$Q_a = Q_b \tag{1}$$

$$P_b = (1 - x)P_a \tag{2}$$

$$Z_a^* = Z_a \tag{3}$$

$$Z_b^* = (1 - y)Z_b \,. \tag{4}$$

$$Z_a = D_a \tag{5}$$

$$Z_b = D_b \tag{6}$$

Since $Z_a = P_aQ_a$, while $Z_b = P_bQ_b = P_bQ_a = (1 - x)P_aQ_a$, it follows that

$$Z_b = (1 - x)Z_a \tag{7}$$

and

$$D_b = (1 - x)D_a \,. \tag{8}$$

Furthermore, from (4) and (7)

$$Z_b^* = (1 - x)\,(1 - y)Z_a \tag{9}$$

or

$$W_b + C_b = (1 - x)\,(1 - y)[W_a + C_a]. \tag{10}$$

Assuming no fixed income recipients, Rolph argues that the money incomes of all resource owners are proportionately reduced, i.e.,

$$W_b = (1 - x)\,(1 - y)\,W_a \tag{11}$$

$$C_b = (1 - x)\,(1 - y)\,C_a \,. \tag{12}$$

Furthermore, Rolph indicates that the total reduction in private money income is equal to the tax yield[7] $(= yZ_b)$, therefore

$$W_a - W_b + C_a - C_b = yZ_b \,. \tag{13}$$

[7] For example, see Rolph's arithmetic example, *op. cit.*, p. 130.

Rearranging terms, we obtain:

$$W_a + C_a - (W_b + C_b) = Z_a - Z_b^* = yZ_b$$

or

$$Z_b^* = Z_a - yZ_b. \tag{14}$$

Substituting equation (4) into (14) we obtain:

$$(1 - y)Z_b = Z_b - yZ_b = Z_a - yZ_b \,. \tag{15}$$

Consequently,

$$Z_b = Z_a \tag{16}$$

which, according to equation (7) implies that $x = 0$, and therefore $P_a = P_b$.

In words, when prices do not fall money incomes are reduced in proportion to the tax rate; and it follows from equations (16), (5), and (6) that $D_b = D_a$. This implies that despite the fall in money incomes (with constant product prices), factor owners maintain the same level of money expenditures, or that they maintain their real consumption[8] intact at the expense of their real savings. Curiously, this suggests a constant real aggregate demand entirely independent of the level of real income of factor owners,[9] which, in turn, implies a perfectly inelastic aggregate demand curve for labor. It is these implicit assumptions which appear rather strange and restrictive, and which give Rolph his surprising results.

It also follows from equations (2), (11) and (12) that no matter what money price (above zero) factor owners are willing to accept, the market price of the product must always fall at a proportionately slower rate than factor incomes (at the same level of employment). Consequently, *resource owners can not collectively receive enough income to clear the market.* Ultimately, assuming a constant aggregate output quantity and an ini-

[8] If resource owners do not maintain their real consumption levels, then, *ceteris paribus*, the level of employment must fall.

[9] The assumption of a constant product mix despite the fall in real income of the factor owners implies that every individual exhibits a unitary income elasticity for each good produced. It then follows that the composition of the consumers' market basket is independent of the level of income. Once the possibility of different income elasticities are introduced, then the composition of effective demand will differ in the post-tax period as compared to the pre-tax situation. Thus, a general excise tax is likely to have an allocative as well as a deflationary effect.

tially balanced government budget, the after-tax equilibrium position of the Rolphian system could only be realized when all factor prices (and hence product prices) fall to zero—that is, when all goods are free.[10] This implication is the inevitable result of Rolph's assumption of perfectly inelastic supply curves of factors and a constant quantity of output.

In view of the restrictive nature of his system, the entire analysis calls for reconsideration. Upon renouncing Rolph's assumption of constant and invariant demand and supply quantities, it can be demonstrated that even with flexible factor prices, a general excise tax *must* involve a change in the level of employment as well as factor incomes. On this tactic it will be disclosed that part of the loss in real income (i.e., the burden of the tax) comes from the unemployed. On the following pages, two models are present. The first one, although highly unrealistic traces the consequences of a general excise tax (in a flexible price system) when the money price of the factors falls by a percentage equal to the tax rate (as Rolph claims). The second model introduces the more realistic assumption of a downward rigidity in the money wage rate.

MODEL I

To facilitate the analysis, the following assumptions (which parallel Rolph's scheme) are made: (1) a purely competitive system, (2) profit maximization, (3) given production functions, (4) a homogeneous labor force is the only hired variable factor of production, (5) a flexible money wage rate, (6) fully integrated industries, (7) a balanced government budget prior to the tax levy, and (8) the level of autonomous investment is constant.

Furthermore, to avoid the possibility that the stock of money in the private sector decreases as the government "impounds" the tax surplus after the tax is instituted, we may assume a perfectly elastic money supply. (Such a supposition is reasonable for it implies that the monetary authority will pursue an easy money policy as aggregate effective demand declines.) Alternatively, and perhaps more realistically, we could assume that the government uses the surplus to reduce the publicly held portion of the national debt and that these funds are then made available to finance new investment. It is evident, therefore, that at the post-tax equilibrium output level, resource owners can collectively receive enough funds to clear the market. (This was not possible in Rolph's scheme.)

Our analysis will employ a relationship between entrepreneurs' expectation of total sales proceeds (Z) and the level of employment (N) such expectations will bring forth, i.e., $Z = f(N)$. This relationship, the aggregate supply function, has been fully developed from its Keynesian origin[11] by Weintraub. Given the level of factor prices, Weintraub derives an aggregate supply function relating employment to money proceeds "in the sense that each expected-proceeds level generates a particular amount of employment." Each proceeds quantity is obtained from the individual industry supply curves by multiplying the supply price by the associated output and summating over all industries. This sum is then related to the volume of employment required for the particular output quantities. Thus, a Z-function can be described from industry supply curves, if the latter are determinate and "if the distribution of proceeds for each expected aggregate volume of proceeds is determinate."[12]

The price level is implicit at every point on the aggregate supply function. Under our assumptions

$$P = MC = w/M \tag{18}$$

where P is the product price, MC is marginal costs, w is the money wage rate, and M is the marginal product of labor. Assuming diminishing returns, M declines with increasing employment levels. Hence, given the money wage rate, prices rise as employment increases.

We will also employ a Keynesian aggregate demand function which, given factor prices, relates employment levels to money expenditure propensities, i.e., $D = \varphi(N)$.[13] The equilibrium level of employment is given by the intersection

[10] Rolph avoids this by either assuming income is constant or lagging outlay behind income. We are entitled, however, to use an equilibrium solution which is devoid of lags—they hardly constitute the essence of tax analysis.

[11] Keynes, *op. cit.*, pp. 25, 29.

[12] S. Weintraub, *An Approach to the Theory of Income Distribution* (Philadelphia: Chilton Co., 1958), pp. 25–26.

[13] See Keynes, *op. cit.*, pp. 25, 28–29. See Weintraub, *op. cit.*, pp. 30–38, for a graphical derivation of the aggregate demand function.

of the aggregate demand and aggregate supply functions.

Assuming a money wage rate of w_a in the pre-tax period, then, in Figure 1, OW_a represents the relationship between the money wage bill and the level of employment. OW_a is a straight line with a slope equal to w_a. Given the factor prices, the aggregate demand and aggregate supply curves are determinate. Thus, in the pre-tax period, let Z_a represent the aggregate supply curve and D_a the aggregate demand curve (in Figure 1). Consequently, N_a is the equilibrium employment level and Z_1 is the level of money proceeds (GNP) in period 1.

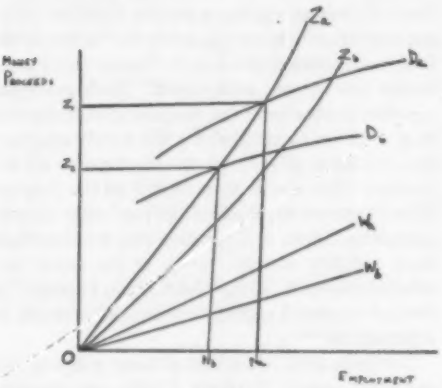

FIG. 1

Following Rolph, we will *assume* that after the general excise tax is instituted, the money price of factors decline by the same percentage as the tax rate. Hence, in Figure 1, OW_b represents the new wage bill line which is $y.100\%$ lower than OW_a at each N-level [i.e., the new money wage rate, $w_b = (1 - y)w_a$]. Similarly, Z_b represents the "net" sales proceeds expected to go to industry at each N-level in period 2, while Z_a remains the aggregate supply (or gross proceeds) curve. The ordinate difference between Z_a and Z_b at any employment level measures the tax yield. At any N-level, there is a discrepancy between the market price and the "net" price of the product.[14]

$$P^* = (1 - y)P \qquad (18)$$

where P is the market price, P^* is the "net" price, and y is the tax rate.

At any given N-level, private aggregate money income is lower in the post-tax period than in the pre-tax period, while the market price for that output level is the same. Consequently, the real income of the private sector, at any given N-level, is lower in period 2 than in period 1. If real consumption is a function of real income, then real aggregate demand at each employment level will decline. Since market prices are the same, at any given N-level, in both periods, this implies that total money expenditures along the entire aggregate demand schedule declines, i.e., D_a shifts downward to D_b. The post-tax equilibrium position will be found at the intersection of the aggregate demand curve (D_b) with the aggregate (market) supply curve (Z_a). Thus, in period 2, the employment level is N_b, total money expenditures (GNP) are Z_2, while market prices are lower than in the pre-tax equilibrium situation.

Hence, with flexible money wage rates, a general and uniform excise tax will reduce the level of employment, total expenditures, and market prices.[15]

MODEL II

In this model, we maintain all the assumptions of the previous one, except the going money wage rate is assumed to be inflexible downwards.[16] In Figure 2, the OW_a, Z_a and D_a curves are identical to their counterparts of the previous model. The rigid wage rate assumption, however, prevents the tax from affecting factor prices. Instead, after the tax is levied, the aggregate supply (gross proceeds) curve is shifted upward to Z_b, while, in period 2, Z_a represents the "net" proceeds going to industry at each N-level.[17]

[14] Cf. Rolph, *op. cit.*, 129.

[15] A complete discussion of a flexible price system should include the analysis of the determination of the money wage rate necessary to clear the labor market when the labor supply curve (in real terms) is upward sloping. Such an analysis can be derived from Weintraub's system (see, *op. cit.*, Ch. 6) but for reasons of expediency and simplicity I have not included such an analysis in this paper. Suffice to say that the conclusions given are consistent with clearing the market in a flexible wage system although the lower post-tax money wage rate (w_b) need not be less than the pre-tax money wage rate (w_a) in the same proportion as the tax rate.

[16] This may be due to legislation on minimum wages, or union power, or ethical notions of a "just" wage.

[17] This upward shift of the aggregate supply curve is the macrocounterpart of the usual micro-

Thus, aggregate private money income at any given N-level is unchanged, while market prices are higher in the post-tax period; hence real income in the private sector is lower. It is unlikely, therefore, that the pre-tax real consumption level (at a given employment level) will be maintained in the post-tax period. Accordingly, the post-tax aggregate demand function could not shift upwards enough to maintain the pre-tax equilibrium levels of output and employment (e.g., to D_a). In other words, the tax reduces real effective demand. Let us tentatively assume that factor owners increase their aggregate money expenditures at each N-level by an amount sufficient to dislodge the D-curve upward to D_b. Despite this movement, it nevertheless follows that employment declines from N_a to N_b.

Hence, assuming a downward rigidity in the money wage rate, a uniform and general excise tax will, *ceteris paribus*, reduce the level of employment. Indeterminateness, however, extends to the fate of the market price level in the post-tax period, for the equilibrium prices in period 2 may be more than, equal to, or less than the market prices of period 1.

In period 1, when the tax rate is zero ($y = 0$), it follows from equations (17) and (18) that

$$P_1 = P_1^* = w_a/M_a \qquad (19)$$

where P_1 is the aggregate market supply price of output, P_1^* is the aggregate "net" supply price, w_a is the money wage rate, and M_a is the marginal physical product of N_a workers. Since entrepreneurs' decisions are based on the "net" prices, in period 2 when $0 < y < 1$, it follows from equations (17) and (18) that

$$P_2 = \frac{P_2^*}{(1-y)} = \frac{w_a}{M_b(1-y)} \qquad (20)$$

where P_2 is the aggregate market supply price in period 2, P_2^* is the aggregate "net" supply price, and M_b is the marginal physical product of N_b workers. Assuming diminishing returns, since $N_a > N_b$, therefore $M_a < M_b$. Comparing equations (19) and (20) we note that P_1 is greater than (equal to, less than) P_2, if $\Delta M/M$ is greater than (equal to, less than) y.

Accordingly, if the percentage increase in the marginal physical product of labor (as employment declines) is greater than the tax rate, then the post-tax price level is lower than the pre-tax price level. (Since the money wage rate is constant, changes in the real wage rate are inversely related to changes in market prices.) In this case, the real wage rate is higher in the post-tax period, and the workers who become unemployed will bear a real burden *in excess of the tax yield*, while the still employed workers will enjoy a higher real income level. If, on the other hand, the percentage increase in the marginal physical product is less than the tax rate, then post-tax prices are higher than pre-tax prices, and the real wage rate is lower. Consequently, the unemployed bear only a portion of the tax burden, since the employed factors' real income will also decline.

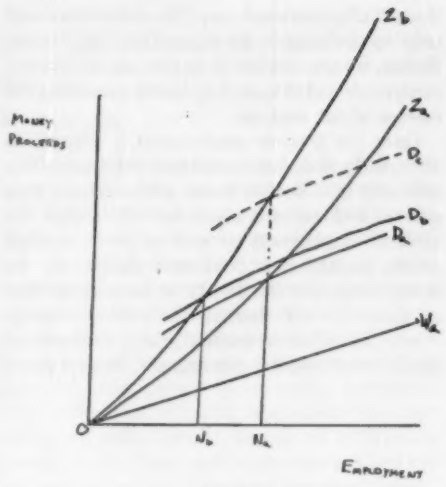

FIG. 2

CONCLUSIONS

Our initial analysis of Rolph's system has disclosed that, on the simplification of a constant level of employment, if a general excise tax is deflationary, then factor incomes must fall proportionately faster than product prices.[18] The seeming contradiction and contrariness of Rolph's model becomes apparent when it is shown that his argument implies that resource owners will not earn enough money incomes to clear the market, which indicates a further cumulative defla-

analysis of the effect of a particular excise tax on the supply schedule of a commodity.

[18] Rolph's system is but a variant of the classical tradition of full employment and is hardly applicable in an economy where employment itself is a variable.

tion till all prices reach zero! He avoids this result only by building in an expenditure lag. Nevertheless, we are entitled to employ an equilibrium analysis devoid of lags; they hardly constitute the essence of tax analysis.

Once the level of employment is allowed to vary, we have demonstrated that in a competitive economy with flexible factor prices (Model I), a general and uniform excise tax will reduce the level of employment as well as lower product prices. Assuming a downward rigidity in the money wage rate (Model II), we have shown that an excise tax will decrease the level of employment. The effect on market prices, on the other hand, is not uniquely determinate. Market prices will decrease (increase) if the percentage change in the marginal product of labor is greater (less) than the tax rate.

If prior to the tax levy there was no idle capacity, then for any given tax rate, it is likely that the increase in marginal product will be substantial, and consequently it is possible that $\Delta M/M > y$. In this case, market prices fall in the post-tax period, and the unemployed lose more in real income than the tax yield. On the other hand, if idle capacity existed before the imposition of the tax, then the increase in the marginal product is likely to be small and therefore it is possible that $\Delta M/M < y$; in which case, the post-tax market prices are higher.

THE SOUTHERN WOODS-LABOR "SHORTAGE" OF 1955

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I

Pulpwood, as the name suggests, is that wood of any kind which has been cut or prepared for processing into woodpulp. The latter, either directly or in the form of recovered wastepaper, in turn furnishes the basic raw material for more than 95 per cent of the country's supply of paper, as well as for a high proportion of the supply of paperboard, plastics, and a wide variety of other products. In recent years, the South has been responsible for about three-fifths of the nation's output of woodpulp; thus, in 1958 Southern pulp, paperboard and paper mills (hereinafter referred to merely as "pulp and paper mills") produced 12.6 million tons of woodpulp, consuming 17.3 million cords of softwoods (almost entirely Southern pine) and 3.1 million cords of hardwoods in the process.[1]

This study is concerned with the supply of Southern pine pulpwood, and to be explicit, with a "shortage" of pine which occurred in 1955. Late in that year, pulp and paper mills throughout the South found it impossible to purchase enough wood, with the result that mill inventories dwindled rapidly. Certain features of the wood itself, as well as its storage, deserve a word of comment if the situation is to be fully understood.

Pine pulpwood is subject to attack by various insects and fungi, and deteriorates badly unless it is "pickled" in water. Only a few mills possess underwater storage facilities. Freshly-cut pine, in addition, yields a higher by-product return in the form of crude sulphate turpentine and tall-oil than is true of wood which has been stored, and the pulp yield likewise varies inversely with the length of the storage period. For these reasons, Southern mills maintain their inventories at levels which Northern mills would consider to be critically low, keeping on hand only a few weeks' supply.[2]

Several other factors caused mill officials to view the dwindling inventories with alarm. For one thing, the demand for pine pulpwood is extremely inelastic, for other woods and materials can be substituted for pine only in small amounts. For another, mill investments in fixed capital are extremely large, so that even a temporary shutdown results in substantial losses. Finally, since pulpmaking and finished-product manufacturing operations are highly integrated, very little "market" pulp is available for purchase, and mills operate literally on a "hand to mouth" basis. Some mills were reported to have on hand only one or two days' supplies of pulpwood; thus, even such normally minor and commonplace occurrences as a delay in rail shipments or a prolonged spell of rain (which would have kept pulpwood "producers" out of the woods) might have proved to be serious.

What had caused the problem to arise? Those assigned the task of providing an answer found that it was necessary to reject the possibility of widespread shortages of wood itself, for only shortly before, the Forest Service had released figures showing an excess of timber growth over timber use in the South as a whole. The truth of this assertion, moreover, was readily apparent to anyone who traveled in rural areas; wood itself could not be a source of concern at a time when tens of thousands of property-owners stood ready to sell stumpage in tracts readily accessible to the logger's saw.

Viewpoints as to the ultimate cause or causes of the phenomenon were divided, though there was a considerable preponderance of opinion which pointed to rural labor—and specifically, to rural *farm* labor—as the immediate source of the difficulty. Continued declines in the farm population, observers bluntly stated, could produce no other result, and mills were warned to expect off-farm migration—be it to industrial centers

[1] *Pulp, Paper and Board: 1958*, Department of Commerce Facts for Industry Series M26A-08, July 24, 1959.

[2] Figures for October, 1959 (the latest available at this writing) show that month-end inventories in the South were equal to only 36 per cent of October consumption, while for the non-South, inventories were 2.91 times as large as the month's consumption. *Ibid.*, Series M26A-109, October. 1959, p. 1.

within the region or to places (industrial or not) outside of the region—to exert a continuous pressure upon the supply of wood. This viewpoint, curiously enough, continued to blossom forth in speeches and published articles some months after the inventory crisis had passed into oblivion, and several mills went so far as to employ economists to study the "labor problem."

In the present paper, we shall first examine and test the labor-shortage hypothesis. Once the popular explanation is rejected, it will then be necessary to provide an alternative answer to the question of why inventories declined. This can be done, as we shall see, only if the buying (as well as the selling) side of the market is subjected to analysis, and our search then leads to an examination of changes in the demand for pulpwood, followed by an appraisal of important changes in market structure and marketing practices which have taken place in recent years.

II

That the population-movement arguments went completely unchallenged was due, in part at least, to a lack of knowledge of the Southern pulpwood industry. The critical assumption was that much of the South's pulpwood was being produced by the *rural-farm* population. Had this in fact been the case, a slow farm population attrition might conceivably have led to a dwindling labor supply, though this would have been a slow process not likely to create problems within the short span of a few weeks or months. Stresses of this sort, moreover, most likely would have manifested themselves first in the supply of on-the-farm labor, which was not in short supply in 1955, even though the year was bountiful so far as major crops were concerned and followed several years of fairly widespread drought throughout the South.

To test the migration and industrialization hypotheses, the writer collected data for 147 counties in the upper Mid-South, which had suffered heavily from off-farm migration, and which had experienced a more rapid industrialization than the remainder of the South. In these counties, also, pine pulpwood output had increased more rapidly than elsewhere. Correlation analysis, applied to absolute levels and changes (1940–50, 1950–55) in the levels of population (rural, rural farm, rural nonfarm, urban, male, and male farm) and labor force (total male, male farm) on the one hand, and levels of pulpwood output and changes (1940–50, 1950–55) in output, on the other hand, failed to establish relationships of the sort which might be expected, had population movements been responsible for changes in output.[3]

Actually, the farm population accounts for very little of the pulpwood supply. A Forest Service and NPA survey, made in 1950, placed the contribution of "farmers and others"[4] at less than three per cent of the total supply in the South, as compared to about nine per cent in the West and approximately 22 per cent in the North. My own investigations in 1956–1957, covering an area in which stable markets had not long ex-

[3] Rural farm population size proved to be negatively related to output, which can be explained by the competition between land uses in agriculture and forestry. A fairly high degree of inverse correlation between pulpwood output and percentage changes in rural-farm population is less easily explained, for it makes no sense to argue that farm population emigration may lead to higher output, because of the time-lag involved in growing a pine crop. Instead, this must be thought of in terms of high output *despite* large farm population losses. Thus, farmers did not produce appreciable amounts of wood in counties in which farm population losses were most substantial (i.e., where farm population was dense and the land was chopped into small parcels), while losses in farm population were negligible in areas in which farmers contributed most heavily to pulpwood output (i.e., where farm population density was low and the land was not fragmented). Pine pulpwood output *changes* (1950–1955) proved to be inversely related to changes in farm population as a proportion of rural population (in 1950), while changes in pulpwood output during the same period were positively related to changes in the total population. No significant relationships existed between changes in pulpwood output and (1) losses in population caused by migration; (2) relative changes in the rural, rural farm, or rural non-farm populations; or (3) percentage changes in the total male and male farm working populations. For a discussion which takes into account problems of age and race, as well as the question of time-lags, see my *Economic Problems of Pine Pulpwood Production in the South and in the Hiwassee Region*, Ph.D. dissertation, Vanderbilt University (University Microfilms, Ann Arbor: 1958), Chapter 9.

[4] The definition excludes company and independent commercial operators, but includes, in addition to farmers, construction contractors, lumber-mills supplying waste, and similar sources. See *Equipment, Supplies, and Manpower Used by Primary Forest Products Industries, 1950*, U.S. Forest Service and National Production Authority, December, 1951, Table I, p. 27.

isted, and in which, therefore, one would expect farmer contributions to be unusually large,[5] showed that even in the peak (non-cropping) periods of the year, "farmer wood" made up less than 20 per cent of total supply, a percentage which did not vary appreciably over time, but which did vary from county to county. In counties producing only very small quantities of wood, the proportion supplied by farmers ran as high as two-thirds; in "high-volume" counties, however, it sank to as low as one per cent. Withdrawals from the market, thus, would not be likely to affect the regional supply of wood to any great extent.

The bulk of the wood, instead, was (and is) produced by the rural nonfarm population, which has steadily increased in size in the South.[6] In view of this, a decline in the size of the rural-farm population would be expected to contribute to, rather than detract from, the pool of labor available to the pulpwood industry. Such movement as has taken place, either toward industrial centers within the region or to places (industrial or otherwise) outside the region, has not been sufficient to place the industry in a position of jeopardy. Another explanation must be sought for the 1955 inventory crisis.

III

One clue to the "real" causes may be gained from production figures for the years 1953–1955, which show that pine pulpwood production was slightly larger in 1953 than in 1954 (though no reports of shortages were heard in the latter year), while 1955 output was substantially greater than in either of the two preceding years.[7]

Turning to the demand side of the picture, we discover that six new mills went into operation in the year 1954, the combined daily pulping capacity of which amounted to 2,620 tons, and the annual wood requirements of which, conservatively estimated, came to nearly 1.5 million cords of wood per year.[8] These new ventures increased Southern pulping capacity by nearly ten per cent. The cumulative effect of what to each must have appeared to be only a slowly expanding requirement for wood resulted in an enormous overall increase in the quantity of wood needed, especially by late 1955.

But this was not all. Mills which previously had been in operation began to expand their output of pulp also, adding to Southern daily capacity 1,114 tons in 1954 and 1,788 tons in 1955.[9]

[5] It takes a certain amount of time for farmers to learn that they can sell stumpage on a cash-in-advance-of-harvesting basis; in addition, they are unlikely to be aware of the existence of commercial harvesters, if indeed any such exist. Where competitive pressures for stumpage and wood have not developed, also, commercial contractors may not find it necessary to defer to the wishes of farmers in regard to such matters as the time of year in which harvesting should be done (many farmers erroneously believe that summer harvesting will lay woodlots open to beetle and fungus infestations), the condition in which the woodlot will be left after harvesting, and so on. As the market ages and becomes more stable, ignorance diminishes and a gradual shift occurs from farmer production to harvesting by full-time professional "producers."

[6] During 1940–1950, for example, in the nine Southeastern states (which account for about 85 per cent of the output of pine pulpwood in the South), rural farm population dropped by 24.1 per cent, rural population increased by 4.3 per cent, and rural non-farm population increased by 55.5 per cent. *U.S. Census of Population* (1940 and 1950), Vol. II, Part 1.

[7] No time-series figures on a month-to-month basis are available for 1953 and 1954 which may be compared with figures for 1955, for in the latter year, the Department of Commerce changed the boundaries of the regions for which pulpwood data are presented. See *Pulp, Paper and Board Industry Report*, Department of Commerce, December 1955, XI, Table 2, fn. 2. Such information as can be pieced together seems to indicate that the 1955 output followed the regular seasonal pattern, dropping off in the second and third quarters and then recovering in the fourth quarter of the year. Annual data for the three years show an output of 14,148,000 cords for 1953, as compared to 14,108,000 cords for 1954, and nearly 15.5 million cords for 1955. *Pulpwood Production in the South*, U.S. Forest Service, Releases 43 and 47 of the Southeastern Forest Experiment Station and Release 76, Southern Forest Experiment Station.

[8] These were (daily tonnages in parentheses): Rome Kraft (650); Bowaters Southern (580); Rayonier, Inc. (250); Buckeye Cellulose (300); National Container (525); East Texas Pulp and Paper (315). The scattered location of these newcomers undoubtedly helped to make wood "shortages" general, rather than locationally specific, in nature. *Ibid.* (1955 ed.), p. 29. The implicit assumption is that 1.8 cords of woods are needed on the average, to produce one ton of pulp, and that mills operated only 310 days, which are commonly-quoted figures. The latter is low, since Southern mills ordinarily close for preventive maintenance only twice a year, and then for only a few days. In 1954 and 1955, mills were operating at 95–100 per cent of capacity.

[9] Twenty mills expanded output in 1954, and

TABLE I

SIZE DISTRIBUTION OF PRIVATE, NON-COMMERCIAL FORESTLANDS IN THE SOUTH, 1952

Size of Forestland Holding	Number of Owners
Less than 100 acres	1,476,000
100–499 acres	322,000
500–4,999 acres	27,000
5,000 acres or more	1,520
All Holdings	1,826,520

Source: *People and Timber, A Survey of the Timber Resource Review*, Miscellaneous Publication No. 721, U. S. Dept. of Agriculture, June, 1956. Pulp and paper companies, it was estimated, owned about 12 million acres of timberlands; other wood-using industries (lumber companies, veneer mills, etc.) held about 21.5 million acres; governments (local, state and Federal) held about 14.7 million acres.

By the end of 1955, increases in pulpwood consumption from this end amounted to approximately 1.6 million cords per year.[10]

Changes in capacity, thus, raised annual wood requirements by better than three million cords—an unprecedented increase for such a short period of time. This sudden rise in demand, it appears quite obvious, was the principal cause of the inventory problem. At the same time, however, it must be noted that fairly substantial increases in capacity in earlier years did not place mills in a similarly critical position. A full understanding of the unique elements of the 1955 situation requires knowledge of the structure and operation of Southern pulpwood markets, and of important changes which had taken place therein.

IV

To those familiar with the high degree of integration between pulpwood production and pulp manufacturing in the Northern and Western states, the almost complete separation of the two in the South must seem unusual. In this area, mills have never found it possible to produce more than a small fraction of the wood they consume, and have relied upon independent contractors (called "producers") for supplies of wood. The size and nature of forest landholdings are responsible for this; thus, in 1952 (the latest year for which reliable data are available) farmers and other noncommercial private owners held title to about 143 million acres (74 per cent of the total) of forest-lands in the South, distributed in the manner shown in Table I.

The land ownership pattern, the typically light volume of wood per forestland tract (nearly all Southern forests are second-growth), difficulties encountered in obtaining credit with which to purchase stumpage and equipment, and the relative ease of new entry, separately and in combination have served to dictate the characteristics of the selling side of the market. These are: a large number (estimated at 20,000 to 25,000) of units, typically very small in size (three- to four-man crews predominate), producing small amounts of wood (500–700 cords per year on the average), on an extremely intermittent or sporadic basis. As might be expected, unit investment in production facilities is light, also, and aside from the use of trucks and the adoption of power-saws, little mechanization has taken place in the woods.

The "typical" producer seldom knows precisely what his costs of production are and tends to ignore fixed charges, which means that from the standpoint of the industry as a whole, a flow of wood is assured at any price which exceeds minimum average variable cost.[11] This in part also accounts for unit production at a fraction of capacity, and also explains why turnover of units in the industry is so high. Workers are paid on an incentive-type basis (i.e., by the cord or "unit"), so that little attention is paid to the composition of the workforce. Man-hour productivity is extremely low; despite this, wages in pulpwood production apparently have compared favorably, over time, with those paid in agricultural pursuits.

On the buying side of the market are the com-

nineteen added to capacity in 1955. Again, geographic coverage of the South was general, and output expanded in every Southern state except Texas, Mississippi, and South Carolina.

[10] Under the same assumptions given in note 9, *supra*, "older" mills were consuming wood in their new facilities at a rate equal to about 11.6 per cent of the total 1954 output of all pulpwood production units in the South.

[11] To be precise, there are two types of production units in the industry: (1) an extremely large number of relatively inefficient, low-volume, high-cost, production units faced with the situation described above, and (2) a small number of relatively efficient, high-volume, low-cost units which do not operate under such cost and revenue delusions. The great bulk of the wood comes from the former type, however, hence the above generalization seems appropriate.

paratively large, extremely efficient pulp and paper mills. In 1955, there were 42 firms which drew pulpwood from the South. Largest of these was International Paper Company, whose nine Southern mills (seven sulphate, two chem-fiber) in that year reported a combined 24-hour pulping capacity of 8,665 tons, equal to more than a fourth of the total daily capacity of all Southern hardwood- and pine-using mills. This firm's mills are scattered through half the states of the South, making it a likely candidate for the position of price-leader in the buying of wood. Although no direct evidence of such leadership exists, a "one-price" system is said (*sotto voce*, of course) to have been in operation since the late 1930's.

Written commentaries on the early development of pulpwood markets are almost non-existent, hence any discussion must be based in part upon conjecture and in part upon information drawn from long-time observers of the industry. Since mills did not begin to move into the South in appreciable numbers until the 1920's, space was no problem and early markets apparently were quasi-monopsonistic in nature. Early arrivals, it is said, merely put up signs which advertised their willingness to purchase wood from anyone wishing to sell. Buying chores were handled by "purchasing agents," who bought felts, chemicals, and other mill supplies as well. Whenever wood supplies fell off, prices were adjusted slightly to promote the flow. Little competition existed between mills, though rivalry of a sort was provided by establishments which sold lumber, treated posts, pilings, mine-props, and other items.

The sudden burst of mill expansion which took place in the late 1930's prompted the first deviation from this pattern. Mills unable to procure enough wood in "truckwood" areas began to encourage storekeepers and others in likely geographic positions to put up signs similar to those posted at the mills, advertising for wood. Subbuyers, or "dealers" as they came to be known, were given a flat commission for wood shipped to the mills, and mills absorbed freight charges. To ensure that particular areas were not stripped of wood, and also no doubt to avoid placing too much reliance upon a few dealers, as well as to stabilize wood flows, mills began to assign annual quotas to dealers.

Where a steady flow of wood could be counted on from reliable producers, semi-permanent buying yards sometimes came into being. These were few in number, however. For the most part, "dealer wood" came from public sidings, or rail loading-points at which a boxcar could be "spotted" for the interval required to obtain wood from producers. During this period, markets tended to be narrow and exclusive: purchases were made only along main rail-lines leading toward mills, whenever possible, to avoid multiple-line hauls and high shipping fees; in addition, dealers found it profitable to limit purchases of "market" wood, preferring instead to buy from "professionals" who could be relied upon to fill a car within a day or two. In this latter regard, high demurrage charges played a major role, although some part also must be assigned to the fact that full-time producers became accustomed to trading on the basis of the particular mill "scale" (i.e., wood specifications) involved, so that fewer misunderstandings and arguments arose in connection with payment.

Postwar expansion of the pulp and paper industry did not begin to make itself felt in the South until well after the war was over, although by 1949 some few mills found it increasingly necessary to rely upon distant sources for wood supplies.[18] Even as late as 1950, however, approximately four-fifths of the pulpwood produced in the South went to mills by truck and barge, and rail shipments accounted for only about one-fifth of the total.[19] No comparable

[18] "An official of one company made a study comparing location selected by his company with that where a competitor was operating and concluded that the competitor's plant was suffering penalty of $250,000 a year because of the wide area which had to be tapped partly by multiple rail routes, in order to obtain pulpwood." Glenn E. McLaughlin and Stefan Robock, *Why Industry Moves South* (Washington, D.C.: National Planning Association, 1949), p. 62.

[19] *Equipment, Supplies, etc., op. cit.*, pp. 5, 30. The Forest Service and NPA actually reported that 46 per cent moved by truck, 49 per cent by rail, and five per cent by barge. This seems to be on a volume-times-miles basis, however, since mean distances were given as 43.5 miles for all wood, and 102 miles for railwood. Under these conditions, the average distance for non-rail shipments would have been a *minus* 12.6 miles, which is impossible. On a cord-mile basis, the 12,435,000 cords of pulpwood moved 43.5 miles per cord, or 540,923,000 cord-miles. Since the average rail distance was 102 miles, this meant that 2,598,500 cords were shipped by rail, leaving 9,836,450 cords to be shipped by truck and barge. On a straight cordage basis, then, only 20.9 per cent moved by rail.

figures can be given for later years; although it is estimated that in 1955—a short five years later—some 610,898 cars of pulpwood were shipped by rail "... East of the Mississippi and South of the Ohio," carrying an estimated 12 million cords of wood, or about three-fourths of the pulpwood consumed in the Southeast in that year.[14] Even if allowance is made for non-comparability of areas and for wide margins of error, one thing is certain: a substantial revolution occurred during the years 1950–1955 in the marketing and transportation of pulpwood. Again, the underlying forces are not difficult to trace.

During the years 1945–1950, much of the growth in capacity was "internal" in substance, i.e., nearly four-fifths of all additions to capacity were made by mills in existence prior to 1945. As a consequence, pressures upon truckwood areas of pulpwood supply became severe, and rivalry among producers increased. In addition to spending longer periods of time in search of stumpage, producers found themselves confronted between the choice of outward movement and long hauls, on the one hand, as opposed to short hauls from less accessible and undesirable truckwood-area stands, on the other hand. Mills also began to add to the woes of producers, buying up nearby timberlands for use as a buffer against possible future shortages. To the individual producer, these changes meant higher costs, not the least of which came in the form of higher stumpage prices. Wood "on the stump" was available at $0.50 a cord nearly anywhere in the South prior to the war; by 1950, the "going" price was $3.00 (or more) a cord, and rising steadily. During the same span of years, it is interesting to note, woods-labor wages rose from $0.25 an hour to something less than $0.75 an hour.

In 1950, a development took place which permitted pulpwood markets to expand geographically. This was the introduction of the mechanical pulpwood loader, designed to take an entire load of wood from a truck and to place it on a flat-car.[15] Large-scale woodyards, possessing temporary storage facilities, now became economically feasible, and as the many advantages of the so-called "mechanized" yard became apparent to all, the number multiplied rapidly. By the end of 1955, there were an estimated 300 in operation in the South, the services of which were available to producers in nearly every important pulpwood-producing county in the region.

With the advent of the mechanized woodyard, mill rivalry for wood increased in number of contacts and in intensity, as procurement areas expanded and inevitably began to overlap. The situation was further complicated by the entry of newcomers, filling the gaps between the older mills and appropriating for themselves outlying areas into which procurement activity otherwise might have been channeled.

Specialized pulpwood buying departments made their appearance at nearly every mill, and the center of buying activity, once located at the mill, shifted into the field. No longer faced by the problem of demurrage, dealers and mill representatives now began actively to solicit wood from part-time producers and farmers. Wood procurement had became, as one observer correctly noted, a job of "promoting" wood flows, rather than one of "ordering" wood at the mills.

By 1954, thus, scarcely an area remained in the South in which there were not at least two large mills competing for wood, each becoming increasingly conscious of the buying activities of others. Nearly every mill, also, found itself faced with the problem of obtaining a greatly increased mill requirement from market areas in which competitors' purchases likewise were increasing rapidly. Under these circumstances, the sudden entrance of six large mills in 1954 was certain to create market stresses.

From the standpoint of the pulp and paper industry as a whole, the solution lay in price increases sufficient in magnitude to cover rising gasoline, labor and other variable costs, and to induce new producers to enter the pulpwood industry from other occupations, such as lumbering, farming, and others of the same general class. So far as individual mills were concerned, however, this method of stimulating growth apparently had become blocked by a rise in "circular interdependence," which manifested itself in reluctance to compete on a direct price basis. Market price, as Table II shows, had remained almost perfectly constant during the years 1951

[14] Estimate and quotation from "Will There Be Enough Pulpwood Racks?" *Pulpwood Production and Sawmill Logging*, March 1957, V, p. 17.

[15] A. I. Jefford, Jr. notes that it was not introduced into the states of Alabama, Georgia, and Florida until mid-1951. "Trends in Pine Pulpwood Marketing in the South," *Journal of Forestry*, July 1956, Vol. 54, p. 464.

through 1954,[15] which may be attributed to concern with the possibility that "price wars" (in an upward direction) might develop and spread, driving the market price to levels which might later persist even if the inventory losses proved to be only temporary in nature. In addition, with the rise of an oligopsonistic ratiocination, each mill would find itself in the unfamiliar and irksome position of having to establish, and continuously adjust, its pricing policies. Finally, a belief apparently existed that increasing the price of pulpwood would do little to ease the situation, for the simple reason that attendant increases in the price of stumpage would prevent mills from passing along any benefits to producers.

Mills chose, instead, to engage in indirect, nonprice competition for wood, in attempts to gain a larger number of producers by the simple expedient of seducing them away from a rival or rivals. Such activity took a number of forms, the simplest of which involved the use of a "loose scale," which meant that wood which ordinarily would have been culled was now accepted from sellers.[17] Some few also began to use the purchase of hardwoods as a "lever" with which to obtain pine.[18] Mechanized railyards were set up in areas formerly served only by "hand" yards, and in some instances, mills established such yards side by side on the same railroad spur, or across the tracks from each other. A number of mills purchased stumpage at one price and sold it to producers at a second (lower) price, built roads at no charge and loaned equipment to producers, provided "pick up and deliver" hauling services for wood placed along the roadside (in effect, hauling the wood to the mills or railyards), extended interest-free loans and advances on shipments not yet made, and in other ways, sought to attract producers away from rivals. To protect truckwood supplies, threatened by railyards strategically placed in such a manner as to intercept wood on its way to the mills, many began paying hauling allowances to producers

TABLE II

SOUTHEASTERN PINE PULPWOOD PRICES, 1947–1956 (IN DOLLARS PER ROUGH CORD)*

Year	Rail Wood[a]	Truck Wood[b]	All Wood[c]
1947	10.80	11.70	10.95
1948	11.65	12.30	11.70
1949	10.85	11.80	11.00
1950	11.85	12.55	11.90
1951	13.65	14.70	13.85
1952	13.70	14.70	13.90
1953	13.70	14.70	13.90
1954	13.75	14.75	13.95
1955	14.15	15.05	14.35
1956[d]	15.25	16.60	15.50

* Price as given is per cord of 128 cubic feet of five-foot wood with bark, and includes dealers' allowances in instances in which they were paid.

[a] F.O.B. railroad car.

[b] Delivered to the mill.

[c] Weighted average of all wood loaded on railroad cars, trucked to mills, and delivered to barge landings.

[d] As of September 1, 1956.

Source: A. S. Todd, Jr., *Research Notes No. 99*, Southeastern Forest Experiment Station, Asheville, North Carolina, October, 1956.

[16] Price controls do not offer an explanation, not only because prices were rigid for a much longer period than controls were in effect, but also because little (if any) pressure was placed on the Southeastern Region's Office of Price Stabilization to raise pulpwood prices. Constant cost did not mean unvarying mill costs, however, for an increased share of hauling expenses and greater overhead (in the form of buying yards, loading equipment, and enlarger wood-procurement staffs) raised the mill-costs of wood substantially.

[17] Use of a "loose scale" not only serves as a direct attraction to producers, but can be used to drive a rival's dealers out of business. Thus, assume that mills A and B purchase in the same area, and that mill A agrees to permit its dealers to "loosen" the scale, perhaps allowing him to accept "cords" of wood which contain less than 128 cubic feet of wood (alternatively, allowing him to accept wood which is smaller than the accepted minimum of four inches, which contains large knots, or which is otherwise undesirable). In the event that B's dealers do not follow along, B's producers will find it profitable to switch allegiance to A's dealers. If B's dealers retaliate without securing cooperation from the mill, then the discrepancy between the dealer's scale and the mill scale will cause losses, which, if continued for any appreciable length of time, will force them out of business. A's dealers are then left in command of the market, as the only outlets for wood in the area.

[18] Producers often find that in order to buy a particular tract of pine, they must agree to take the hardwoods from the land also, in which case they "shop around" to see if mills will take both kinds of wood in a "package" transaction. A mill which uses both kinds of wood has a distinct advantage over that which buys only pine, since it can agree to take some hardwoods (which can be stored indefinitely, and is usually "aged" prior to use) on the condition that the producer will agree to sell his pine to that firm only.

(usually $0.05 per cord-mile, with a fifty-mile hauling limit).

Such activities, as might be suspected, proved fruitless for the simple reason that non-price competition tended merely to redistribute existing producers among buyers, and did not add producers to the industry as price increases would have done. Pressure for more aggressive action began to mount, as would be expected, and in the late fall of 1955, Champion Paper and Fibre advanced its unit price by $1.25, with International and all other mills responding with an increase of $1.00.[19] Once the price was raised, new producers entered the industry and the output of wood rose so rapidly that within a very short period of several weeks, inventories were back to normal and the flow of wood had to be "cut off" by refusal to buy from producers.[20] The pulpwood inventory "crisis" no longer existed.

[19] This difference of $0.25 remained until the spring of 1956, when Champion responded to a general increase of $0.50 by raising its price only $0.25, and thereby falling back into line. Why Champion "broke" with the market, and why the difference was possible is explained in part by the location of Champion's two Southern mills (one of which is backed up against the Great Smoky Mountains and the other of which is located in the westernmost portions of the pine-woods in Texas, and neither of which faces competition from all directions), and in part by the fact that other mills have become accustomed to Champion's apparent disregard for convention (one reflection of this is seen in the refusal by Champion, alone among Southern mills, to bargain with national trade unions in its mills).

[20] One may ask why price cuts were not placed into effect, if the volume of wood became excessive. A rapid increase in demand for mill products appeared to be taking place, and a general presumption appears to have existed, also, that the supply curve of wood might well prove to be elastic for downward movements of price. It has been argued by industry spokesmen that the 1955 increase (as well as the spring 1956 price "hike") was placed into effect to permit producers to pay the new $1.00 minimum wage to their workers. This argument is a feeble one, however, at least insofar as the 1955 increase is concerned, for the new minimum wage did not go into effect until March, 1956.

V

The central argument of this paper can be summarized briefly as follows: popular views of the 1955 Southern pulpwood inventory problem, which held that population movements were responsible for the phenomenon, were patently incorrect. Rather, the explanation is to be found in price rigidity, itself the product of certain changes which took place in the buying, as well as the selling, side of the market. Thus, basic to any explanation were not only (1) the cost position of producers, and (2) the conditions under which longrun supply additions could be made, but also (3) the rapidly-increasing demand for wood, (4) the change from a near-monopsonistic buying pattern to one of oligopsonistic competition, (5) the attendant rise of circular interdependence, and (6) the resultant unwillingness of buyers to engage in active price competition.

A final comment must be made concerning the labor supply, and the tendency to confuse the supply of workers with that of entrepreneurs, or producers. If a "labor problem" can be said to face Southern pulp and paper mills, it is that which arises when large numbers of workers stand ready and willing to enter the industry, only to find themselves unable to do so when potential producers find entry unprofitable. In a period of rapidly-increasing demand and greatly-intensified competition for wood, such as Southern mills now face, however, even such a "woods-labor shortage" is likely to prove illusive.

Finally, the case at hand demonstrates clearly how easily one can be misled by overly simple explanations of what may actually be a fairly complex situation. In most instances of this sort, the conventional tools of market analysis can provide a satisfactory answer.

AN INTERPRETATION OF PALANDER'S[1] TWIN SECURITIES MARKETS PROPOSAL

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The monetary theorist has long functioned much like an airplane navigator without an altimeter. Despite the fact that monetary policy has been conducted upon the assumption that the level of economic activity responds to the level of the interest rate, the policy maker has not been provided with any mechanism by which he could accurately determine the "proper" rate of interest.

How high should the rate of interest be? Existing theories of monetary equilibrium give only the vaguest notion. Policy recommendations stop short of prescribing the exact altitude to which the monetary authority should take the rate of interest in order to insure monetary equilibrium.[2] As a consequence, monetary policy has become limited in its effectiveness, and economists have tended to transfer their attention and affection to "more direct" policy measures of a fiscal nature.

It is of particular interest, therefore, to note a fairly recent proposal by Professor Tord Palander of Uppsala University.[3] Palander suggests an institutional mechanism which would function in such a way as to provide the monetary authority with indications as to what the "proper" rate of interest should be in order to insure monetary equilibrium. The novelty of Palander's proposal in itself demands attention. However, the practical implications of the system are sufficiently far-reaching to make the reader pay serious attention to the proposal and to recognize it as a pioneering venture in monetary theory. The institutional mechanism which Palander proposes consists of a twin securities markets arrangement. One market would deal in securities defined in terms of the monetary unit; the other, would deal in securities defined in terms of a constant purchasing power unit. Palander assumes that once the twin securities markets are established, the public will move freely, by way of "inter-market purchases," between money securities and constant purchasing power securities, dependent upon what they feel to be their advantage.

The direction of these "inter-market purchases," Palander argues, is a function of the community's expectation concerning the future trend of the price level. If the price level is expected to remain constant, borrowers and lenders will be indifferent whether they issue or buy securities defined in terms of the monetary unit or in terms of the constant purchasing power unit. Accordingly, the rate of return—the rate of interest—will be the same in each of the twin markets. If, however, expectations concerning the future price level are altered this equality of the rates of interest in the two securities markets disappears.

In order to aid further discussion, let us designate the rate of return on constant-purchasing power securities as E_r; and the rate of return on money-defined securities as E_m. In addition, let us introduce Palander's $\mathfrak{X}$ which is defined as a measurement of the community's expectations concerning the rate of change of the price level. The relationship between the two rates of interest can then be stated symbolically: $E_m = E_r + \mathfrak{X}$.[4]

As long as the community expects an unchanged price level, ($\mathfrak{X} = 0$), E_m will equal E_r; if prices are expected to rise, ($\mathfrak{X} > 0$), E_m will be greater than E_r; and if prices are expected to fall, ($\mathfrak{X} < 0$), E_m will be less than E_r. This rela-

[1] Professor Tord Palander, *Värdebeständighet: ett problem vid sparande, livsförsäkringar och pensioner* (Stable Value: A Problem for Holders of Savings Accounts, Insurance Policies and Pensions) (Stockholm, Sweden: P. A. Norstedt & Söner Förlag, 1957).

[2] Monetary equilibrium is here defined in the G. Myrdal sense as equality of *ex ante* investment and *ex ante* saving.

[3] T. Palander, *op. cit.* In his review of Palander's book, Professor Bertil Ohlin wrote: "Let me say at the outset that I regard this work as one of the foremost which Swedish economic science has ever produced in the 'practical' area of economics." (*Morgon-Bladet*, January 14, 1958, p. 2.)

[4] T. Palander, *op. cit.*, p. 192.

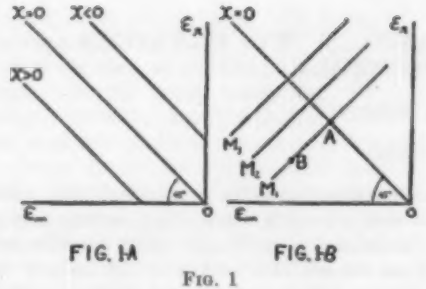

FIG. 1

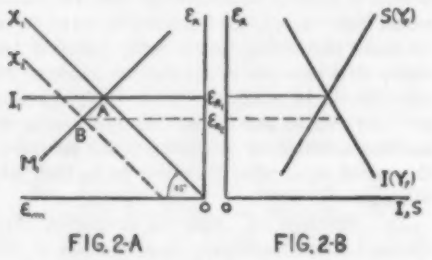

FIG. 2

tionship can be illustrated graphically to some advantage:[6]

Palander's iso-money schedule (the M schedules in Fig. 1-B) is a statement of the community's substitution ratio between money securities and constant purchasing power securities, assuming the quantity of money (and hence of securities) unchanged. In graphic terms it is represented by a function relating the two rates of interest, E_m and E_r. It will be noticed that a family of iso-money schedules has been drawn. Each higher schedule represents a smaller amount of money held by the community, thus indicating the impact of open-market operations conducted by the monetary authority. As the monetary authority sells securities (increases the total amount of securities held by the community) and reduces the money supply, the community moves from iso-money schedule M_1 to iso-money schedule M_2.

Palander assumes that the community will be sensitive to changes in the expected price level. If the community expects a rise in the price level, it will sell money bonds (thus increasing the level of E_m) and will buy constant purchasing power bonds (thus lowering the level of E_r). In other words, if the $\mathfrak{X}$ schedule shifts to the left, indicating that the community expects price inflation, inter-market purchases will immediately bring about a movement from point A to point B on iso-money schedule M_1.

It will here be assumed (given the level of income) that investment is a decreasing function of E_r and that saving is an increasing function of E_r. This assumption is made by the present author. It is believed that it goes far to get at the essence of Palander's exposition, which is characterized at a number of points by loose construction. The functioning of the system can be observed much more easily once this assumption is made. Basically, what this involves is viewing saving and investment as taking place in "real" terms, i.e., as if creditors and debtors were lending and borrowing capital goods.[8] It should be emphasized here that the exposition which follows is an interpretation and not a summary of Palander's proposal.

In Fig. 2-B, let $S(Y_f)$ stand for full employment, (Y_f), saving; and $I(Y_f)$ stand for full employment investment.[7] Iso-money schedule M_1 indicates both the quantity of money (and total securities) held by the community and the community's rate of substitution between money securities and constant purchasing power securities (Fig. 2-A).

A new schedule now makes its appearance: the iso-investment schedule, designated by I_1 in Fig. 2-A. The iso-investment schedule is a statement of the combinations of E_r and E_m which will maintain a full employment level of income.

In a situation of monetary equilibrium, *ex ante* investment is equal to *ex ante* saving at a given rate of interest, E_{r_1}. In terms of Fig. 2-A, monetary equilibrium is achieved at that point at which the iso-investment schedule (I_1), the iso-money schedule (M_1), and the price-expectations schedule $(\mathfrak{X}_1)$, intersect. As drawn in Fig. 2-A, initial equilibrium exists at point A.

Let us now assume that the community sud-

[6] *Ibid.*, pp. 194–196.

[8] This assumption was suggested by the following statement in Knut Wicksell's *Interest and Prices* (London: Macmillan Company, 1936), p. xxvi.: "There is nothing *so far* to bring the rate of interest on money into coincidence with the rate which would be determined if real capital goods were lent in kind." It would seem that Palander's proposal can be used to fulfill this deficiency which Wicksell observed.

[7] It should be noted that these functions (in figures 2-B and 3-B) are defined in *ex ante* terms.

denly expects a rise in the price level. In addition, let us assume that this is purely psychological and limited to those members of the community active in the securities markets. We are assuming, in other words, that a change in price expectations is not accompanied by any shift in the $S(Y_f)$ or $I(Y_f)$ schedules. This unrealistic assumption is made for the sole purpose of aiding the demonstration of the system. It will be relaxed later.

A change in the price expectations in an inflationary direction shifts the $\mathfrak{X}$ schedule to the left in Fig. 2-A. Inter-market purchases take place immediately. The community sells money securities and buys constant purchasing power securities, thereby moving *along* the M_1 schedule from point A to point B. Point B designates a situation of *ex ante* disequilibrium. It will be observed that point B corresponds to a level of interest (E_{r_2}) at which *ex ante* investment exceeds *ex ante* savings. If E_r is allowed to remain at this level, the expected inflation will be realized.

The policy implications of Palander's system now become apparent. If a discrepancy between E_r and E_m appears, *ex ante* disequilibrium exists. The monetary authority must direct itself to abolishing this discrepancy. The policy norm is quite simple: equate the two rates of interest (E_r and E_m), by either changing the composition of the community's debt holdings (via inter-market operations), or altering the absolute size of the community's debt holdings (via open-market operations). Stated in other terms, the monetary authority must take it upon itself to maintain $\mathfrak{X}$ at a zero value.

In the case of the disequilibrium designated by point B in Fig. 2-A, proper policy would require that the monetary authority engage in inter-market operations. That is to say, money securities should be bought (reducing E_m) and a like value of constant purchasing power securities sold (raising E_r). As a consequence of this policy, the $\mathfrak{X}$ function would shift back to zero (the 45° line), thereby moving the combination of interest rates from disequilibrium point B to equilibrium point A. Once again, it will be noted that since the money supply is held constant, the changes in the two rates of interest will be defined by movements along the iso-money schedule M_1.

Let us now make the realistic assumption that price expectations directly reflect changes in $S(Y_f)$ and $I(Y_f)$. Let us assume that price expectations change in the direction of inflation as a direct consequence of a significant shift in the investment schedule (for instance, a major innovation). This situation can be described in Fig. 3-B.

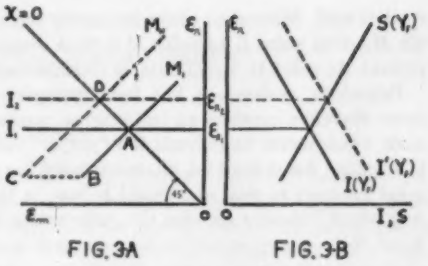

FIG. 3

Point A in Fig. 3-A is the original equilibrium point. This equilibrium is disturbed by (a) a leftward shifting in the $\mathfrak{X}$ schedule, (b) inter-market purchases, and (c) an upward shift in the investment schedule $I(Y_f)$. As a consequence of the shift in the investment schedule, a new iso-investment schedule, I_2, is established, defining the various combinations of the rates of interest that now must exist in order to maintain full employment equilibrium.

Let us assume that changing price expectations are shifting the $\mathfrak{X}$ function steadily leftward. At some point B, the monetary authority intervenes. It begins by selling constant purchasing power securities. This moves the economy to higher iso-money schedules. If the $\mathfrak{X}$ function is constant, E_r would rise. However, at the same time as the M schedule shifts upward the $\mathfrak{X}$ schedule is moving to the left. The shifting M and $\mathfrak{X}$ functions prevent the E_r rate of interest from rising. Instead of increasing E_r through open market sales of constant purchasing power securities, the monetary authority succeeds initially only in keeping it from falling further.

The monetary authority will continue to sell constant purchasing power securities and to move from point B to some point C. Beyond point C, further sales of constant purchasing power securities will begin to raise the rate of interest on constant purchasing power securities, E_r. At this point the monetary authority knows that it is on a new and stable iso-money schedule. At point C, therefore, inter-market operations will begin. Money securities will be purchased and a like value of constant purchasing power se-

curities sold. Movement along iso-money schedule M_a from point C to point D is then accomplished. At point D, equilibrium is reestablished.

Palander's system—as has been interpreted here—therefore provides an institutional mechanism which serves to indicate the "proper" rate of interest. Assuming that the community has a great aversion to risk[8] and would behave in the way which Palander specifies (i.e., attempting to move from money securities into constant purchasing power securities when expecting a rising price level), the twin securities markets system would provide the monetary authority with an "automatic" means of maintaining monetary equilibrium.[9] Policy would be directed to keeping the $\mathfrak{X}$ function at its zero value position. When inflationary price expectations pushed the $\mathfrak{X}$ function to the left, open-market and inter-market operations could be undertaken to push it back to its original equilibrium position ($\mathfrak{X} = 0$), where monetary equilibrium is insured.

[8] Guy Arvidson ("Om indexlån," *Ekonomisk tidskrift*, June 1958), stresses the important role which aversion to risking losses due to price changes has in Palander's system.

[9] The system can perhaps be viewed as a solution to the "rules versus authorities" dilemma which Henry Simons has discussed in his now famous article, "Rule Versus Authorities in Monetary Policy," *Journal of Political Economy*, 1936, pp. 1–30. At the same time, the system offers a mechanism which is much more sensitive in its adjustment to changing business conditions and expectations than the monetary policy proposals of Lloyd Minta, *Monetary Policy for Competitive Society* (New York: McGraw-Hill, 1950).

A MORAL PHILOSOPHY FOR MANAGEMENT*

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Professor Selekman is eminently qualified to write this book. He has a vast experience in management relations with labor, individual and unions; he is a keen analyst, and he has a sense of looking below the surface to discover what really goes on. He has a sympathetic understanding of the problems that face both corporate managers and labor leaders in this new economic world which has emerged in the last thirty years. He is brilliantly qualified to undertake this analysis, and he has lived up to expectations.

Professor Selekman begins with a description of the total lack of moral responsibility of the employer of two generations ago beyond the wage payments. Gradually, over the intervening years, one after another fringe-benefit was introduced. The owner-manager was replaced by the professional manager who introduced what has become recognized as moral responsibility into his contracts. This includes retirement pensions, insurance against accidents, sickness, and unemployment.

"The behavior of Businessmen was consistent with the basic philosophy dominating the nation" (prior to 1930):

1. Adam Smith's doctrine of self-interest, "Wages constitute a price, just like that of any inanimate goods" (p. 9).

2. Malthus' doctrine that the "workingman was thus predoomed to live close to a subsistence level."

3. Ricardo's formulation of the iron law of wages, exploited by Karl Marx.

4. Darwin's discovery of the "survival of the fittest," developed by Spencer into the social philosophy of dominance by the strong, and the submergence of the poor, as a law of nature.

This philosophy, Professor Selekman says, prevailed until the 1930's. Out of all this, there have developed three dominant power institutions—management, labor unions, and government—each firmly entrenched. What had begun as new practices, now has developed into what Professor Selekman calls "Constitutions." These are deeply established customs and methods that are leading lights of the economy, and largely at odds with each other.

It is unfortunate that management has not been accepted by labor or government—indeed is mistrusted by both. This survives from a continuance of the hatred implanted by the ruthless attitude typical of two generations ago which has not materially softened over time. This lack of trust is due to both the outward arrogance of management and their obdurate resistance to change as well as the fanning of ancient flames by union leaders. Both of these he finds inexcusable. The discredited Marxian doctrines are still outwardly proclaimed, even though the position of management has in fact turned a complete circle. If anyone is dominant today, it is union labor leaders, and they are misusing their power. In addition they are closely seconded by the new powers of government.

Management today is hampered by the divergence of the "technical *must* versus the Ethical *ought*." It *must* meet competition, adjust to circumstances and remain solvent. These limitations are harsh, untouched by the appeals of righteousness in the democratic Judaeo-Christian ethics. Corporate management cannot extend benefits recklessly, as can welfare and religious organizations. Government also has unlimited powers of taxation, with which to finance its extension of power.

"Thus, all of a sudden, business was dramatically at a disadvantage as compared to the position of power it had had prior to the 1930's" (p. 6).

Hounded by powerful union leaders, hampered by an unfriendly government, corporate managers set about developing a new attitude of moral responsibility. But in this they have been severely handicapped by the facts of business life. Business above all must be productive. A corporation must be competitive and must make a profit—this stark necessity makes it difficult

* This is a review article of Benjamin M. Selekman, *A Moral Philosophy for Management*. New York: McGraw-Hill Book Co., 1959. Pp. xii, 219. $6.00.

(sometimes impossible) to carry out in practice the high moral purposes which they proclaim in their speeches and writings. Hence they are charged with duplicity by labor leaders, seconded by government. They are accused of seeking *only* profits, at the cost of general social welfare. Every opportunity for keeping alive the hatreds of the past is exploited. In spite of their present dominance, labor leaders have succeeded in maintaining their "underdog" sympathy of society in general and their union membership in particular. Repeated efforts to bring together the viewpoints of management and labor have proven abortive.

These two powerful forces—the conventional stressing of the "underdog" attitude by labor leaders and the necessities occasioned by the laws of productivity have stood in the path of working out a new morality which is fitted to the present facts of the economy.

Professor Selekman devotes a section to the "Danger of Self Righteousness" which has many interesting and discussion-provoking comments. "Consistent with this moral quest, industrial leaders have put their weight behind the world-wide struggle for liberty and justice. Wherever businessmen gather, this theme of social responsibility is sure to receive major attention.

"So it is ironical, or maybe pathetic, that businessmen may at the same time be acting unthinkingly to create a class society, with all the threats to democracy and moral life which that implies" (p. 22).

"These concepts and feelings derive from the great sacred documents—the Ten Commandments, the Sermon on the Mount, the teachings of saints and rabbis. They find their secular echo in the Declaration of Independence, Lincoln's Gettysburg Address, the Preamble to the Constitution, and other state papers that have become hallowed in time.

"In common with other Americans, businessmen subscribe unequivocally to these tenets. Yet when talking about actual problems such as productivity, inflation, and the related political activities of union and government, they unwittingly undercut their own professions of faith" (p. 25).

However, he points out, they claim all the credit for increase of productivity. (This I would question.) And he goes on to say that "in a modern complex organization, it is almost impossible to pin down who *really* is responsible for productivity." That is true; but do not the labor unions also claim the credit?

And he concludes: "Management must be particularly careful not to stamp a differential status on various groups working in industry. Against such a background, all the speeches and communications about the free enterprise system sound like the tinkling of hollow brass, and management cannot then contribute to the welding of a community, to the inspiring of communion" (p. 29).

For guidance in working out the solution of the complex relationship created by the country's new economic problems, Professor Selekman turns back to analysis of the writings of John R. Commons. This choice is superlative: Professor Commons was a keen analyst of the first order, perhaps not surpassed in the institutional economic field (pp. 124 ff.).

Professor Commons worked out a new relation of the individual to the economy, pointing out that he does not operate directly but through the group of which he is a member. He creates the word "societal," to distinguish this form of organization from either socialism or communism. His basic principles (p. 132) are:

1. The labor union, the political state, and equally business management must be specifically understood as group organizations, collectives, conditioning human activities in our present-day American economy.

2. They are all in their origins tools of man's needs and purposes in industrial society, in varying ways running now along parallel courses, again crashing in head-on conflict, finally forging a length of common, or at least intermeshing, trails.

3. The dynamism of the group organizations constitutes an integral feature of their characteristic structure; they are indeed essentially men interacting, representing always, by the tests of Commons's foundational definition, "collective action in liberation, expension, and control of individual action."

To one who equally holds the philosophy of Professor Commons in high esteem, it is a satisfaction that Professor Selekman has brought him back into the center of the stage, after being put on the shelf by an intervening mathematical generation of economists.

Through the interworking of these three constitutions, none dominant, but each powerful and interdependent, Commons looked forward to a

peaceful solution of conflicting relationships. But he regarded corporate management as the primary power thrust, and this has been tamed from within by the evolution of management and from without by the growth of union labor and government.

"Now that it is organized labor which has been functioning in its first power thrust, while the state increases its interventions, we can see that mediation of the power tugs does not follow as directly as Commons—with many others—believed it would when group power had achieved better balance. Nor did he measure adequately the opposite side of the group power coin which made the prized individual freedoms of the American industrial citizen themselves a social creation before they were natural rights" (p. 161).

Just as the new constitutionalism was getting under way and gaining acceptance, the revelations of the McClellan Committee shocked the public. "To say that the community is less than happy with unions would surely be an understatement" (p. 170).

"All the more because of this public, romantic support of our 'underdog' group, it came as a shock to discover that these unions were not dedicated social organizations, but powerful groups exerting constant pressure on industry for increased wages and fringe benefits under enlarged social security programs. And in 1957 came the greatest disillusionment of all in revelations of corruption and racketeering, of self-aggrandizement on the part of leaders, of the emasculation of democratic processes within these unions, of the establishment of virtual dictatorships, and of the practice of resorting again and again to the Fifth Amendment when pressed for evidence by a senatorial committee" (p. 172).

Another interesting comment is that the labor leader of today has a close affinity to the owner manager of industry two generations ago. The labor leader created, he fought and bled for, he suffered for his organization, whereas the professional corporate manager took over his task from the original owner-creator. He is not a fighter. He is adept at making skillful compromises. His task is to keep the show going, to survive, to make a profit, if possible. The militant naked power is on the side of the labor union.

Again, the union is basically a marketing agency—it concentrates on higher wages and better conditions for its members. Management, on the other hand, has many aspects to consider —its customers, the general public, its position in the industry, the welfare of the white collar workers, their technicians and the foremen, who are becoming more important to them, as well as its stockholders. The power-thrust is all on the side of labor.

It is interesting that Professor Selekman finds that (p. 191) "There is little danger that the unions will try to invade seriously the realm of managerial functions." They actually prefer to remain in the opposition. I question this statement. At best it is only partly true.

Another of Professor Selekman's golden comments is in his Chapter 27 on corporate constitutionalism (p. 204). "Reflection on the experience of corporate management with trade unions is a sobering experience. It shows up the grim realities inherent in the adventure of establishing justice through constitutionalism. Old abuses may be correlated, but new ones creep in."

"Who is to say, for instance, what wage or what production standard is just and right?" This recalls the *justum praetium* of the medievalists.

Professor Selekman discusses the claims of production employees, the white collar group, the engineers and technicians, and top management, and concludes "As part of the judicial system, there is no real substitute for arbitration by outsiders." He hopes that now the rough and tumble stage of union organization and the bitter fights, strikes, sit-downs, and man-picketings are over, a more civilized era may be dawning. Perhaps he is right. Perhaps, also, a new generation of labor leaders is coming into power, with a moral philosophy comparable to that of the professional corporate managers.

PROFESSOR WEINTRAUB'S "GENERAL THEORY"*

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AND
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There is an old Tennessee proverb, "He who tooteth not his own horn, same shall not be tooted." This adage could well be supplemented by the warning, "but he who tooteth too loud on a sour note will soon have no listeners." Some incredibly loud tooting has been done by Sidney Weintraub and the publisher of his recent little book, *A General Theory of the Price Level, Output, Income Distribution and Economic Growth.* This book is advertised by such phrases as a "sensational breakthrough," and a "new conceptualization of major importance." Its importance is also emphasized by the author throughout the text. A far better procedure would have been to allow other economists to judge its merits, but in the opinion of the present writers this would have brought few plaudits. Actually the book is not directed primarily at economists but seems to be aimed more at an unsuspecting, but affluent, public.

Weintraub claims to have discovered a "magic k" which is a "mark up factor" relating Business Gross Product to Compensation of Employees in the national income estimates of the Department of Commerce. This magic mark up factor averages about 2 in magnitude; that is, BGP is about twice as great as Compensation to Employees. The "mark up" is quite steady from year to year although subject to a considerable downward trend during the last three decades—a somewhat "disturbing" matter which the author does not emphasize. (k is about 14% lower in 1957 than in 1929.) This empirical observation of the substantial constancy of total employee compensation as a percentage of national income—which has often been made before—constitutes the basis for Weintraub's work. It is incorporated in a "basic truism," $P = kw/A$, where P is price, w is the average wage per worker, A is the average product per worker, and k is the magic mark up. This asserts that the average price per unit of goods entering into the BPG is equal to k times the average wage per unit of output. This truism works from an arithmetic point of view but has no theoretical basis to make it a useful, much less a revolutionary, conceptualization. In fact, Weintraub at one point (p. 33) asks why k is so steady and answers that good explanations are lacking. At this point he is right.

The "average product of labor" is not the refined concept of price theory in which total product is divided by number of workers applied to a given amount of capital. Instead, the contribution of capital and the return to capital are not emphasized. Only wage and salary payments are considered to be of prime importance in determining the price level. But the author later shows that other distributive shares are also quite steady as a percentage of BPG and he could just as well have computed a truism incorporating a magic k related to rental payments, for example, per unit of output. Presumably Weintraub would have then "explained" the movement of prices by reference only to factors which alter the rent paid per unit of output.

In a particularly hyperbolic statement, he declares that the high constancy of k is "probably the most important economic law, in the true sense, that economists have to work with" (p. 33). Most of us will still feel that the law of supply and demand will explain more than the magic k.

Professor Weintraub goes out of his way to praise the work of the Department of Commerce. While this agency probably does a good job with the information and other resources at its command, statisticians working on the extremely complicated national income estimates would probably be the first to admit that many components are very rough. Statistics for the important construction industry, for example, are known to be extremely poor. It is entirely pos-

* This is a review article of Sidney Weintraub, *A General Theory of the Price Level, Output, Income Distribution and Economic Growth.* Philadelphia: Chilton Company, 1959. Pp. xii, 123. $3.50.

sible that a good deal of the relative stability of k actually arises from the use of such a factor in making the national income estimates in some sectors.

So far as any theory whatsoever is involved in Weintraub's work it appears to be a crude version of the labor theory of value. He says (p. 56), "In its simplest terms R, or w/A, boils down to a statement of the labor cost of production, per unit of output, for each good. Is it not plausible to expect that when this rises, that prices will rise?" Weintraub answers his own question with "I think so." He does not say why he thinks so, and in an economy where a great deal of capital is used, where some prices are competitive, some monopolistic, and some regulated by commissions, the answer could better be "I think not." It should be noted that the entire demand side of price determination is omitted from consideration.

On the same page Weintraub quotes with approval a statement by Milton Friedman that the only relevant test of the validity of a hypothesis is comparison of its predictions with experience. The basic difficulty, however, is that Weintraub *has no* hypothesis except possibly the long-discredited labor theory of value. His work is an outstandingly clear example of statistical calculations and mathematical formulations without the necessary economic content. As has already been pointed out, his magic k could about as well have been computed as a mark up over rental cost per unit of output and presumably some sort of "rental theory of value" would then have to underlie all of his formulations.

Weintraub feels that his contribution has challenged and toppled the quantity theory of money as involved in the equation of exchange $MV = PT$, the cash balance equation $M = XPQ$, and as restated by Milton Friedman. In place of the quantity theory of money and the equation of exchange, Weintraub substitutes a "wage-cost mark up" and the basic truism which incorporates this mark up.

Critics before Weintraub have noted the threefold error of the traditional theory of money. For example, Walter A. Morton noted that the traditional quantity theory "(1) ... did not explain the underlying economic facts and expectations responsible for expansion and contraction in the volume of circulating media and its velocity. (2) It assumed velocity to be constant. (3) It did not explicitly show the process by which money affected prices through its effect on income."[1]

Morton goes on to say that income expenditure analysis "attempts to remedy the first two deficiencies by analyzing the causes of business fluctuations and it supplies the third need with the Keynesian formula $Y = C + I$. Substitute MV (income velocity) for Y and PT for $C + I$ and the relationships are apparent."[2]

Weintraub does not make it clear whether he is attacking the quantity theory on the basis of its usefulness in predicting short run or long run changes in prices. If he is attacking it on the basis that it cannot predict short run changes in prices, then a better job was performed by W. C. Mitchell. As Friedman has noted, Mitchell's contribution, with regard to the quantity theory, consisted "... in emphasizing that the elements in the quantity equation ($PT = MV + M'V'$) must be regarded as dated and that different dates must be attached to the various elements for the equation to be an identity. ..."[3] And even Irving Fisher had more than a nodding acquaintance with the importance of time in the quantity theory. Thus we find in his *The Purchasing Power of Money*: "We have emphasized the fact that the strictly proportional effect on prices of an increase in M is only the *normal* or *ultimate* effect after transition periods are over. The proposition that prices vary with money holds true only in comparing two imaginary periods for each of which prices are stationary or are moving alike upward or downward and at the same rate."[4]

If Weintraub is, on the other hand, attacking the quantity theory on the basis that it cannot predict price changes over reasonably long periods, then he is, in effect, discarding "... the experience of centuries that changes in the quantity of money have been the most important single cause of depreciation in its value. ..."[5]

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[1] Walter A. Morton, "Trade Unionism, Full Employment and Inflation," *American Economic Review*, March 1950, p. 15.

[2] *Ibid.*

[3] Milton Friedman, "The Economic Theorist," in *Wesley Clair Mitchell, The Economic Scientist*, edited by A. F. Burns (New York: National Bureau of Economic Research, 1952), p. 252.

[4] Irving Fisher, *The Purchasing Power of Money* (New York: Macmillan Company, 1913), p. 159.

[5] Walter A. Morton, *op. cit.*, p. 15.

In taking to task Milton Friedman's "Restatement" of the quantity theory and Richard T. Selden's recent article,[6] Weintraub confuses the numerical stability of velocity with its functional stability. Thus he writes: "There is only one observation that need be made: if there is 'an extraordinary empirical stability' to income velocity, if this is a 'constant' then k must be regarded as 'rigid'! Truly k is the 'magical constant'..." (p. 81). Yet Friedman in his discussion of the stability of the demand for money noted explicitly in reference to Cagan's study of hyperinflation that:

> ...It is also an interesting example (Cagan's study) of the difference between a numerically stable velocity and a stable functional relation: the numerical value of velocity varied enormously during the hyperinflations, but this was a predictable response to the changes in the expected rate of change in prices.[7]

And earlier in his "Restatement" Friedman notes:

> ...the quantity theorist need not and generally does not, mean that the real quantity of money demanded per unit of output, or the velocity of circulation of money, is to be regarded as numerically constant over time....For the stability he expects is in the functional relation between the quantity of money demanded and the variables that determine it....(he) not only regards the demand function for money as stable; but he also regards it as playing a vital role in determining variables that he regards as of great importance for the analysis of the economy as a whole, such as the level of money income or of prices. It is this that leads him to put greater emphasis in the demand for money than, let us say, the demand for pins, even though the latter might be as stable as the former.[8]

Weintraub feels that his contribution will, among other things, shed light on the recent controversy over the causes of inflation. The similarity between his formulation and the crudest form of wage-price spiral is obvious. Both assert that prices are cost-determined. Weintraub provides a variation in the theme only insofar as he asserts that the demand and supply of money responds to the "needs of trade."[9] In essence his contribution is an attempt to formalize the popular notion of a wage-induced inflation—to run with the pack as it were.[10]

Not content with his statistical calculations and mathematical formulations Weintraub takes up—and for the wrong reasons—cudgels against the Federal Reserve System. The Federal Reserve System, he states, is not equipped to combat inflation since it cannot sit in on wage negotiations (pp. 85–86). He summarizes these views in the following: "Our criticism of the Federal Reserve System has been of the incompatibility between the job and the tools allotted. Man may get to the moon in a rocket, not a rocking chair. The wage level, not the money supply, governs the price level" (p. 88). His policy prescription for "watchtower control" over wage agreements is on par with his crude wage price spiral model. Weintraub feels that all that would be required at this juncture would be a "research agency collecting data on all (important) wage agreements, and estimating what their implications are for the price level by means of the tools staked out above"[11] (p. 90). This information when made available to Congress would tend to restrain the demands by union leaders and businessmen for wage and price increases (p. 90). What, in effect, Weintraub's "watchtower-control" amounts to is an attempt to persuade individuals to act altruistically contrary to their economic interests. If such moral suasion were to fail, then presum-

[6] Richard T. Selden, "Cost-Push versus Demand-Pull Inflation, 1955–57," *Journal of Political Economy*, February 1959.

[7] Milton Friedman, "The Quantity Theory of Money—A Restatement," *Studies in the Quantity Theory of Money*, edited by Milton Friedman (Chicago: University of Chicago Press, 1956), p. 18.

[8] *Ibid.*, p. 16.

[9] See especially Chapter 8, Weintraub. For an anaylsis and empirical tests of the wage-price spiral models and the demand-pull model see Yossef Attiyeh, *Wage-Price Spiral versus Demand Inflation: United States, 1949–1957* (Unpublished doctoral dissertation, University of Chicago, December 1959).

[10] Mute testimony as to the progress made between the 16th and 20th centuries in legitimatising popular discussions as to the causes of price rises is provided in a quotation from Walter A. Morton, *op. cit.*, p. 21. "During the sixteenth century when prices were constantly rising because of the influx of gold from America, Bishop Latimer (1548) put the blame on 'land lordes and rent raisers, steplordes, unnatural lordes,' when it was the landowners who were being expropriated by the rise in prices because of long term leases."

[11] It is interesting to note that he does not define "important wage agreements."

ably more drastic measures in the form of wage and price controls would be called for. In all of this the government would be blameless since it cannot affect prices because it only controls the money supply!

In his final chapter, Professor Weintraub produces a "synthesis and union of the theory of growth and the theory of the price level" (p. 111). Here he displays again his penchant for developing mathematical expressions which fail to promote economic understanding. It turns out that "the price level in a growing economy will also respond to the movement in money wages" (p. 114). This result is traceable, however, to the original basic truism and has no greater theoretical validity than before. And as before some such figure as total rental payments or total interest payments could have been incorporated instead into the truism for the price level course in a growing economy. No theoretical reasoning is adduced to explain the vital and exclusive role of wage costs at this point any more than at the earlier stages.

The end result of the "final synthesis" seems to be the following implication: "Of two economies having the same current growth rate, that economy which devotes more of its augmented output to new productive instruments will ultimately triumph in the race for higher living standards" (p. 118). This statement seems to consider high per capita consumption at some nebulous future date to be a desideratum of economic policy, without regard to welfare during the interim. It appears also to disregard the dangers to freedom which may inhere in attempts to step up the rate of economic growth by authoritarian measures.

COMMUNICATION

THE LOGICAL DISTINCTION BETWEEN COST AND DEMAND INFLATION

Recently partial equilibrium analysis has been used in an effort to show the logical distinction between cost and demand inflation. Selden employs the following diagram to show "the kinds of evidence" that would permit a distinction between cost-induced and demand-induced price rises.[1] He is concerned with industry demand and supply schedules, and relative price rises. He states that if the supply curve shifts from S to S_1 price moves from P_0 to P_1, and output declines. If the demand curve shifts to D_1, price rises to P_2, but in this case output rises. A complication arises, however, if both curves shift, with price rising to P_3. Selden suggests that "an empirical investigation of specific product markets should provide worthwhile clues to the relative strength of demand and cost influences on prices."

More recently William Bowen has considered this problem.[2] He stresses the "fundamental fuzziness" of identifying cost-induced price increases with shifts in the supply schedule and demand-induced price increases with shifts in the demand schedule. Commencing with the perfectly competitive case, in which "it seems reasonable to treat the demand and supply schedules as if they were completely independent of one another" (p. 201), he rightly points out that the shapes of the demand and supply curves, in his diagram, determine the extent of the price rise when either or both of the curves shift upward.

It is the purpose of this Communication to consider further the following points which are implicit in this type of analysis:

(1) The part played by the shapes of the supply and demand curves when either or both shift upward;

(2) The interdependence of the supply and demand curves even under perfect competition, and the special significance of this interdependence under conditions of unchanged output (in particular, full employment output); and

(3) The futility of attempting to infer causality with respect to demand-induced or cost-induced inflation from shifts in supply and demand curves.

With reference to Fig. 1, there is nothing about the relation between P_3 and the sum of P_1 and P_2 which can tell us the relative quantitative contributions of cost and demand to the rise in price. This is because a change in output occurs, the effect of which on price depends on the slope of one or the other curve, or both. Thus, if cost rises and the supply curve shifts, the reduction in units sold is determined by the demand schedule, and conversely if it is the demand curve that rises. Only if the stationary curve is vertical (Figs. 2a and 2b) does output remain unchanged, in which case the entire rise in price is directly attributable to the schedule which shifts.

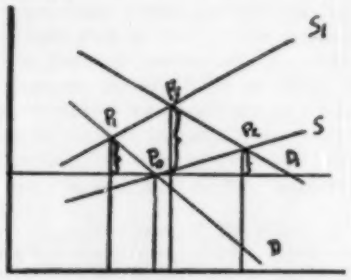

FIG. 1. A Rise in Demand and Cost

In other words, the immediate (though not the ultimate) contribution to a relative rise in prices (that is, an industry price rise) is unambiguous only when output remains unchanged, which is the case when the stationary schedule is perfectly inelastic. Otherwise we are at a different point on the supply schedule, so that (1) if it is the supply curve which shifts, the fall in output means that the rise in price is mitigated by the decline in unit cost at the lower output, and (2) if it is the demand curve that rises, price rises by less than the increase in demand so long as supply is not perfectly inelastic.

[1] Richard Selden, "Cost-Push versus Demand-Pull Inflation, 1955–57," *Journal of Political Economy*, February 1959, p. 10.

[2] William G. Bowen, "'Cost Inflation' Versus 'Demand Inflation': A Useful Distinction?" *Southern Economic Journal*, January 1960, pp. 199–206.

The slopes of both curves are relevant to the extent of the price rise when the shift in one or both curves results in a change in output. This is illustrated in Figs. 3a and 3b.

In Fig. 3a, the greater the slope of the supply curve, the greater the upward shift that is necessary to produce a rise in price from P_1 to P_2. In Fig. 3b, the steeper the demand curve, the greater the price rise that is caused by a given upward shift in the supply curve. A shift in the demand schedule is illustrated in Fig. 4. Here a counterclockwise rotation of the supply curve indicates that the steeper its slope, the greater the price rise on a given upward shift in demand. Similarly, the steeper the slope of the demand curve, the greater the upward shift in demand that is necessary to produce a given rise in price.

Nothing that has been said above conveys any information about the relative roles of demand and cost shifts in causing a rise in price except in the unusual circumstances of vertical demand and supply curves. All that has been accomplished is to indicate, for the partial equilibrium case and a single industry, under competitive conditions, the way in which either autonomous or induced shifts in supply and demand schedules propagate rises in particular prices. But focusing attention on the case in which there is no change in output does point the way to a more dynamic treatment of the problem. Fig. 5 indicates the possibility of a shift in both the demand and supply curves which results in no change of output. Either schedule may shift first, and if the other responds with an equal rise, output remains unchanged and a higher equilibrium price is reached.[3] In this case the price effects are obviously independent of the slopes of the curves. This diagram, like the others, tells us nothing

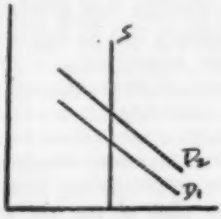

FIG. 2a

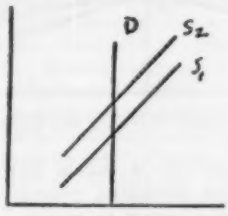

FIG. 2b
Output Unchanged: The Stationary Curve Vertical

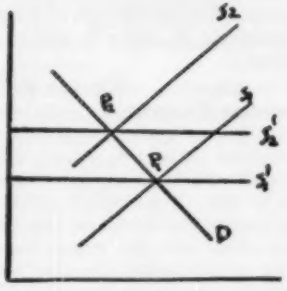

FIG. 3a

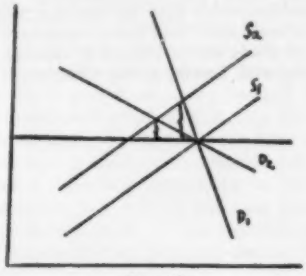

FIG. 3b
A Shift in the Supply Curve

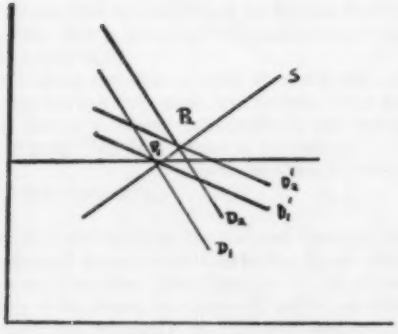

FIG. 4. A Shift in the Demand Curve

about the relative roles of autonomous cost and autonomous demand changes in the inflationary process. But it does call attention to the fact that for the economy as a whole, supply and demand curves are interdependent even under perfect competition. A rise in unit cost may, under specified conditions, provide the necessary purchasing power to resource owners to permit demand and price to rise with no change in output. Similarly, a rise in demand may drive up cost with similar results. The latter would occur at full employment; but the former could happen at any level of employment.

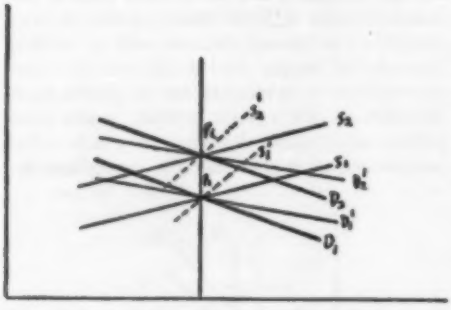

FIG. 5. Equal Shifts in Supply and Demand Curves

It is clear that an analysis of inflation in terms of shifts in supply and demand schedules can tell us nothing about the location of the initial shock. Even if a logical distinction is made between cost and demand inflation, this does not help in locating the disequilibrium. To do the latter it is necessary to make an analysis industry by industry, evaluating situations in which rises in demand face inelastic supply conditions, or unit cost rises occur which cannot be explained by previous rises in demand. If this is done, it is unlikely that we shall want to speak of either pure demand or pure cost inflation except in unusual circumstances like war, an investment or consumption boom, or an open economy facing a rise in prices of key raw materials imports. Moreover, recognition of the fact that once an inflationary process is under way many or most of the cost and demand shifts are merely responses to movements in other variables shows the futility of endeavoring to measure the contribution to rising prices made respectively by shifts in supply and demand curves.

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[8] In this simple case we are ignoring, of course, the difficulties which face the simultaneous equilibrium in commodity and factor markets. Cf. Bent Hansen, *A Study in the Theory of Inflation* (London: Allen and Unwin, 1951), Chapters VII and VIII.

BOOK REVIEWS

Planning for Freedom: The Public Law of American Capitalism. By Eugene V. Rostow. New Haven: Yale University Press, 1959. Pp. x, 437. $6.00.

In this volume Dean Rostow essays a general review of major contemporary problems in three fields: Law, Economics, and Political Science. As such the book is a remarkable achievement. It is not often that one man can speak with such poise over so wide a field.

Dean Rostow begins with the basic political case for capitalism, passes on to monetary problems of stabilization, from there goes on to problems of monopoly and wage setting, and winds up in a general survey: "Is Freedom Interesting Enough?" somewhat reminiscent of Galbraith. This brief summary of topics hardly does justice to the range and solidity of the volume which almost approaches a young elementary economics text.

I should like here merely to call attention to a few unresolved conflicts in Dean Rostow's thought. First of all it seems to me he is somewhat out of touch with reality in his treatment of labor. I mean that he is still much more pre-occupied with the dangers of big business than with those of big labor. The treatment of these points is colored by a certain cultural lag.

Rostow is also somewhat ambivalent on the subject of colonialism. After quoting a rather emotionally anti-colonial passage from Bentham (p. 53), he then goes on to take the somewhat cold-blooded stand that the main advantage for the West of ending colonialism is that it saves us money. But next he advocates immense spending to aid the new nations and goes further to suggest that nations "culturally unprepared for the responsibilities of freedom" may require "cultural receivership." "The Cromers and Lyauteys may in the future wear the uniform of the United Nations. But their day is not done." So colonialism wasn't so bad after all?

In picking out from a mass of topics two concerning which I have some reservations I have not done justice to a very commendable and worthwhile book. The best advice is to read it.

DAVID MCCORD WRIGHT
McGill University

Imperfect Collusion in the Cement Industry. By Samuel M. Loescher. Cambridge, Mass.: Harvard University Press, 1959. Pp. vi, 331. $7.00.

This is the fourth in a series of studies on competition and monopoly in American industry financed by the Merrill Foundation. No brief review can do justice to the history, technology, and economic issues marshalled for consideration.

Chapter I analyzes the concept of imperfect competition. The "basic question is whether the basing-point system reflects anything more than the spatial working of imperfect competition—with all sellers merely meeting the lower prices quoted by rivals more advantageously located." The chapter "concludes by distinguishing between the pricing-formula variety of imperfect collusion and Fellner's concept of imperfect spontaneous coordination, and between the spatial uncertainties of the cement industry and the Chamberlinian variety of uncertainty" (p. 2). "Because cement is a product of derived demand, the technological and economic behavior of the construction market tends to make the demand for it rather price inelastic, geographically mobile, and cyclically unstable" (p. 5).

After a review of the how and why of basing points, it is pointed out that the cement industry seems to be characterized by high overhead costs, marginal costs not much more than half total costs, and a penchant for over-capacity. Its customers may have brand preferences, but only to the extent that prices are virtually identical with those of competitors. Such conditions foster cut-throat competition, interpenetration of markets, and cross-hauling in periods of falling demand. Rather rigid adherence to formula pricing was the industry's defense. Mavericks violating the formula were disciplined by (usually) some multi-mill firm which interpreted a breached formula to be "evidence the price cutter had reduced his base price" (p. 125). He was then made to live with this reduced price by generalizing his price concessions. Usually he recanted.

Known rail transport costs made easy ascertainment of the controlling mill's base price. Less-advantaged competitors were free to meet the quotation by absorbing extra freight charges, hence the, to the public, incredible identical bids. Truck transportation eliminated exact knowledge of transport costs, so the major portion of the industry resorted to delivered prices, refusing to load buyers' trucks. Again and again the author reverts to this practice. He appears to favor openly quoted f.o.b. mill pricing, freedom for the buyer to send his own trucks, abolition of the practice of refusing to sell directly to contractors inside municipal limits (dealers will squeal), elimination of identical bids, interpenetration of markets coupled with some reduction in price to customers close to the

mill. Just how much hob this would play with industry profits is indeterminable. Profits were shown to be handsome though not princely since 1945, so the changes presumably would not be drastic as long as demand remains strong. It is doubtful if the trucking issue is as important as the author feels it to be. The railroads are winning back a growing percentage of cement traffic, and bulk trucks move much of the remainder. Of a dozen dealers, contractors, and ready-mix sellers interviewed by the reviewer, only one felt he could save by using his own trucks, and then only on bag cement.

It is not clear how much effect the cement decision had on pricing practices. The modifications to permit price reductions to meet in good faith existing competition seems to have restored to a considerable extent the former structure, modified by the fact that all mills, in a way, are basing points. As long as formula pricing is the prevailing practice, Professor Loescher's term "imperfect collusion" may be more realistic than the ubiquitous "imperfect competition."

RODMAN SULLIVAN

University of Kentucky

Integration and Competition in the Petroleum Industry. By Melvin G. de Chazeau and Alfred E. Kahn. New Haven: Yale University Press, 1959. Pp. xviii, 508. $7.50.

This is the third, and in many ways the most impressive, in the Petroleum Monograph Series,[1] established by a grant from the American Petroleum Institute. This volume is divided into four principal sections. The first, primarily introductory in nature, sets the stage with a description of the industry's present structure and historical evolution, and the importance of the oil industry to the United States economy. The second deals with the problems raised by state regulation of production in an integrated industry, and with the resultant operation of the pricing mechanism. The third, entitled "Investment and Innovation," deals with the impact of integration on investment decisions. The final segment attempts to describe the structure of markets in which petroleum products are sold, and to determine the extent to and the manner in which integration and size affect prices, competition and non-integrated refiners and marketers.

The description of the scope of this work should make it apparent that a systematic and complete review is extremely difficult. This is truly a work which must be read to be appreciated. The scholarship is excellent, the data compiled and analyzed in extremely thorough fashion, and the conclusions set forth clearly.

Essentially, it is the view of the authors that the monopoly potential resulting from the combination of large, vertically integrated organizations, effective control of crude production by state authorities and federal import restrictions is offset in good part, although not entirely, by the facts that "vertical integration per se does not prevent competition even in price" (p. 553), and that products markets "nourish opportunities for independent operators" (p. 554). Consequently, "the structure and practices of the petroleum industry beyond the production level are ... workably competitive" (p. 563).

It is difficult to quarrel with the conclusion that competition at the production level is unworkable. Prorationing to market demand, often done in a manner which encourages excessive drilling and waste, has, in combination with the industry's structure and federal import quotas, brought about a situation in which "a dependable downward (that is, buyer) pressure on price does not exist" (p. 251). Indeed, the de Chazeau and Kahn conclusions on this point are exceedingly unequivocal. The American Petroleum Institute (a trade association) and its members are to be commended for their part in financing the research which resulted in conclusions contrary to the industry view, and in not interfering with the publication of these researches.

The authors' other conclusions are neither as firmly stated nor as tenable. That vertical integration, absent monopoly power, but combined with large absolute size has no potential for economic mischief seems debatable. And the opportunities for independents in strata beyond the producing level do not, to this reviewer, seem as "nourishing" as they do to the authors. Survival capacity of these independent refiners and marketers in a period in which the majors' incentive to tolerate them is offset by severe economic necessity has not been proved. Failure of the majors to exercise power does not mean they do not possess it. Perhaps, by indicating that their conclusion concerning the workability of competition is made "provided something is done to improve the workability of competition in crude oil markets," the authors are, like good producers, sufficiently hedging their bet. In fact, they repeatedly express concern about threats to independent refiners and marketers. Certainly, at least one of them is aware of the "dangers," "leverage" and "inequities" inherent in ver-

[1] The previous volumes, published by Yale University Press in 1954 and 1957, respectively, were: Ralph Cassady, Jr., *Price Making and Price Behavior in the Petroleum Industry*; and Erich W. Zimmermann, *Conservation in the Production of Petroleum*.

tical integration when competition in one stratum of an industry is seriously imperfect.[3]

IRWIN M. STELZER
Boni, Watkins, Jason & Co.
New York City

A & P: A Study in Price-Cost Behavior and Public Policy. By M. A. Adelman. Cambridge, Mass.: Harvard University Press, 1959. Pp. xiv, 537. $10.00.

Instructors and students of economics and marketing, as well as others in allied areas of interest, are familiar with the litigation between the Federal Trade Commission and the Atlantic & Pacific Tea Company. Most also have some knowledge of the writings of Professor Adelman on this case and of his opinions concerning it and the methods of prosecution. This book contains some of these materials the author has published previously, but with elaboration, and, in some instances, in the form of a restatement.

The two specific areas isolated and analyzed in this book are: (1) the cost-price policy in the A & P organization, and (2) the judicial process in the antitrust case against the company. The discussion of these areas is organized into three parts. The first is entitled Sales and Price Policy, and contains the history of the A & P Company with emphasis placed upon the attempts of management to understand its market, to develop sound policies for this market, and to secure enforcement of headquarters' policies.

The second part, The Procurement of Goods, comprises more than half the text and covers a number of topics. The development of the A & P buying system is first explained, food product types and market structures are described, and the firm's relations with large and small suppliers are analyzed in detail. The legislative background and the provisions of the Robinson-Patman Act are then described in a chapter and this is followed by one on A & P's adaptation to this Act. The incidence of price discrimination is next analyzed and an attempt made to measure the extent and significance of discrimination that resulted both for and against the A & P. The last four chapters are concerned with the development of and the effects of the firm's integrated organization and with the operations of the Atlantic Commission Company.

In the third part, entitled Economic Theory and Public Policy, the litigation against the company and the goals and values implicit in the case are analyzed in the light of economic theory and policy. In this, the litigation is traced through the District Court, the Circuit Court of Appeals, the later civil suit, and the final consent decree. In the final chapter, the author suggests standards for antitrust policy, discusses what he terms the "conspiracy in law and theory in economics," and makes an assessment of the probable long-run significance of the A & P case.

It is thus clear that the limitation of the subject to only two areas has not resulted in a book of narrow scope. Neither can the author be accused of having selected problem areas that are readily and easily analyzed. The large number and widely diversified products that enter into food distribution, as well as the wide quality and supply variations that occur in these products, make food distribution a difficult area to analyze. These difficulties are further accentuated in price analysis because of differences in the distribution methods utilized and the frequent and often violent price fluctuations that take place. Moreover, the period selected for analysis by the author is one of particular difficulty, for it was during this time that integration took place on a large scale and that other marketing innovations were introduced.

The task of organizing this conglomerate mass of information is admittedly difficult; that of writing, as the author states, "in a language that will be intelligible to non-economists" also presents a complex assignment. The author may have succeeded as well as could be expected in these two respects, but it is probable that both the organization and some of the writing will be criticized. The sequence in which the materials are presented makes necessary much repetition and too numerous references to what has been said before or is to be said later. Reiteration of a fact or concept may be desirable in many instances, but it can also become monotonous or frustrating to the reader. Moreover, the attempt to write on a complex economic subject in terms that the non-economist can understand always entails the risk of producing a result that may be only partially satisfactory for the latter and unsatisfactory for the professional student.

In spite of the shortcomings that are inevitable in a study of this nature, this is an interesting and challenging book. As such, it makes a valuable contribution to the literature in the general marketing, price and antitrust fields. Many of the statistical data selected or computed from the thousands of exhibits presented during the course of litigation and from other sources, as well as much of the general information gleaned from the court record and the business field, have either not been

[3] See Joel B. Dirlam and Alfred E. Kahn, *Fair Competition: The Law and Economics of Antitrust Policy* (Ithaca: Cornell University Press, 1954), pp. 141–172.

available heretofore or have been scattered through such a large number of reference sources that they have not been usable by many students.

Important as both the general and specific information contained in the book may be, it is this reviewer's opinion that the many premises made and the conclusions drawn are of more significance from the student's point of view. These are challenging and are frequently in conflict with those held in the academic, business and legal fields. It can be expected, therefore, that this book, as some of the author's previous writings, will be the subject of disagreement and controversy not only at the present time, but also in the years to come.

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University of North Carolina

The Price Discrimination Law: A Review of Experience. By Corwin D. Edwards. Washington, D. C.: Brookings Institution, 1959. Pp. xxii, 698. $10.00.

Professor Corwin D. Edwards' monumental treatise on price discrimination in general, and the Robinson-Patman Act in particular, merits the intelligent attention of all those who may be interested in a comprehensive examination of the attempt on the part of the Congress to correct by legislative enactment some of the more flagrant abuses of the marketplace in the area of pricing policies and practices that had not been reached by the pricing sections of the Federal Trade Commission and Clayton acts. Many people professed to believe that price discrimination was destroying competition, and that the preservation of competition in the marketplace was the responsibility of the Federal government. The aim of the Robinson-Patman Act was to curb the purchasing power of influential and aggressive buyers by regulating, in considerable detail, the conduct of sellers. As a new refinement of the equal protection clause of the Fourteenth Amendment, although the constitutional provision was not invoked in the legislative deliberations, every purchaser, regardless of size, location, credit or financial resources, was to be able to acquire his merchandise at a non-discriminatory price. That the legislation has failed to fully accomplish the purpose for which it was intended is freely conceded by Professor Edwards and many others. Few students of this complex problem, however will go so far as to advocate the outright repeal of the Robinson-Patman Act, or to seriously question the wisdom of governmental intervention in the marketplace in the manner here provided.

While the Great Atlantic and Pacific Tea Company was one of the principal targets of this highly controversial legislation, some of the provisions of the Robinson-Patman Act, as interpreted and applied by the Federal Trade Commission, are concerned with alleged price discrimination in areas not directly related to chain stores. For example, in recent years much attention has been focused on basing-point pricing, single and multiple. The FTC contends that most forms of basing-point pricing involve price discrimination prohibited by statute. This position has been vigorously challanged by many important segments of American industry, including steel, cement, and glucose. But for the timely veto of President Truman, Congress, under terrific pressure from interested industries, would have "reversed" the rule of the *Cement Institute* case. Although public interest in basing-point pricing appears to be on the wane, it is not unlikely that the debate will be renewed if FTC shows any inclination to apply the Cement Institute rule to other large and important industries.

In the enactment of the Robinson-Patman Act, the public interest was not of primary concern, although the argument was advanced, as justification for this legislation, that the public interest would be served if market competition were maintained. As to be expected, special interest groups —including independent wholesalers, brokers, retailers, and others—played a significant role in the enactment and enforcement of this legislation. From his vantage point as a long-time economist with FTC during much of this period, Professor Edwards was able to document this activity. That special interests, with a private economic end to be served, were able to enlist the support of Federal legislative and administrative machinery to accomplish this purpose, is a fact that should not be overlooked in an appraisal of this legislation. To argue that the Federal government frequently intervenes in the marketplace to protect the vested interests of particular groups does not justify the enactment of the Robinson-Patman measure.

With regard to research procedures in the complex area of statutes, FTC dockets, and court decisions, the experience of Professor Edwards in collecting material for this valuable publication demonstrates that little, if anything, of value is to be gained from interviewing at this time, or at any other time short of the millennium, officials of companies that have been involved in matters before the Commission, regardless of the outcome of the same, even though able and distinguished interviewers are used. Any information obtained from this source would be suspect unless it could be documented, and that, for the most part, is not possible.

To those who contend that the Robinson-Patman Act has created more problems than it has

solved, Professor Edwards points out that "the statute has afforded effective protection against the price-cutting activities of predatory would-be monopolists and that it has substantially reduced the discriminatory advantage in price enjoyed by the large buyers" (p. 622). Notwithstanding this conclusion, which he supports with rather convincing evidence, Professor Edwards advocates such modification of the Act as the deletion of the brokerage section and the criminal provisions of Section 3. The conclusions and recommendations of Professor Edwards—and even the use of some of the material on which his study is based—will not go unchallenged. This challenge will be in the public interest if it develops into a public debate on the merits and demerits of legislation like the Robinson-Patman Act.

CLYDE C. CARTER
University of North Carolina

Merger Movements in American Industry, 1895–1956. By Ralph L. Nelson. Princeton, N. J.: Princeton University Press, 1959. Pp. xxi, 177. $5.00.

Dr. Nelson's principal objective in this empirical study is to provide more complete data on merger activity in manufacturing and mining for the period 1895–1920. By implementing earlier studies and filling the 1904–1919 gap, the author has made possible a continuous series on merger activity running from 1895 through 1956. In addition to a new count of the number of mergers, the study also includes a breakdown of merger activity by industry and by capitalization. It is fitting that this study should have been sponsored by the National Bureau of Economic Research, since the first study of merger activity in the United States was made there nearly thirty years ago by Dr. Willard L. Thorp.

Much of the material contained in this study is presented in tabular form. The book, including the appendixes, has eighty-five tables within its one hundred and seventy-seven pages. Possibly Table 14 on page 37 is one of the most significant. This table presents the author's count of the number of firms disappearing each year (1895–1920) through merger. It also shows the annual amount of capitalization involved in this activity. The author's count is based mainly on information appearing in the weekly issues of *The Commercial and Financial Chronicle*. These data have been checked against other sources, including earlier studies.

The first merger wave, during the period under study, took place from 1898 to 1904. An average of 301 firms disappeared annually during this period. The year 1899 was the peak year of activity with 1,208 firm disappearances having been recorded. After 1904, there was a long period during which merger activity was at a low rate. The author found that the annual rate for firm disappearances, from 1905 to 1914, was only 100 firms per year.

The second merger wave occurred during the period, 1926–1930, and a third wave, from 1946–1956. Possibly the third wave is still in progress. In each period, the existence of a well-organized capital market is regarded as essential, in order to absorb the large volume of securities resulting from merger activity. However, a capital market is not demonstrated to be of importance as an ultimate cause.

In relating merger activity to the level of economic activity, the author finds that there is a better correlation between merger activity and changes in stock prices than there is between merger activity and the level of industrial production. Commenting on this cyclical relationship, Dr. Nelson states that: "In expansions the peak in stock trading is reached first, followed by merger activity, stock prices, business incorporations, the reference cycle, and industrial production in that order." In spite of the close relationship between merger activity and stock prices, the author contends that there is little evidence that the stocks of merged companies were successful investments or that mergers were contrived as a means of exploiting the unwary investors. Unfortunately, it is impossible to determine and list the motives that promoters of mergers may have had in mind. However, the author feels that it is safe to infer that the desire to avoid vigorous competition and the promise of monopoly profits may have been important.

In providing new and more complete information on merger activity in manufacturing and mining, the book makes a definite contribution. Teachers, students, researchers and others interested in this area of economics, will find here much new and valuable information. While this brief review has pointed to areas of more general interest, a reading of the book and its appendixes will disclose an abundance of data relating to more specific areas of the subject.

JOHN T. MASTEN
University of Kentucky

Economics for Pleasure. By G. L. S. Shackle. New York: Cambridge University Press, 1959. Pp. ix, 269. $3.95.

It is indeed heartening to find a book on economic theory published by an illustrious British University that openly tries to redeem our social discipline from the grips of mathematics. Its author, a renowned Professor of Economics in the

University of Liverpool, sets for himself a very useful task in his effort to lay bare the essence of economics in plain English without any mathematics and any diagrams. He correctly maintains that economic theory will not be read for enjoyment as long as the reading requires "the brain teasing study of diagrams and equations." For this reason alone the book of Professor Shackle has a distinct value and reflects, perhaps, the present rising tide against an excessive use of the mathematical "symbolic language" and method in our cultured and basically institutional science.

The author regards his work as an attempt to entertain an average reader. It is questionable whether this purpose has been fully achieved in the book because of its theoretical nature that can be appreciated only by a reader who is willing and able to master economic analysis. Such a difficulty is, perhaps, unavoidable unless the author wanted to write a distinctly elementary book —which was hardly the real objective of Professor Shackle. Yet, there are some shortcomings that could be avoided. For instance, "the ladder of possible or imaginable prices" considered at the end of the fifth chapter is so mathematical in its essence that it does not fit into a literary analysis. Also Professor Shackle's doubt that the theory of general economic equilibrium can be taught in words is rather surprising because this is exactly what he had done himself with notable success. It is rather natural that the author, who is a British economist, closely follows Keynesian thought. Yet, the Keynesian approach is neither easy nor always impeccable. There is, perhaps, only one case in the book when Professor Shackle openly disagreed with Lord Keynes. This occured in the theory of interest when the author rejects the Keynesian criticism of a rather evident fact that interest may eventually be the price for savings. There are some cases when the author's deviation from the Keynesian way of explaining things makes the book less accessible than it would have been otherwise. So, for instance, it is easier to explain the multiplier as the reciprocal of the total leakages than as "the equilibrium ratio which is equal to the ratio of the extra output to the extra *ex ante* net investment-flow" (p. 164). There can be hardly any doubt that Dr. Shackle's attempt to integrate into the theory of multiplier or employment the Swedish idea of the *ex ante* and *ex post* viewpoints does not fit into the frame of an accessible and entertaining economic analysis. On the other hand, the influence of Keynes on the author induces him to underestimate the very important distinction between hoarding and productive saving or between profit and the interest on one's own investment. However, the constant emphasis put by the author on the Keynesian train of ideas and numerous references to the thought of Alfred Marshall do not imply that his book is devoid of any original idea or any new interpretation of some familiar propositions. On the contrary, the reader will find some refreshing ideas in the chapters on Firms, Income, Bargaining, Tariffs and Planning.

Since Professor Shackle is critical of mathematical economics, that heavily leans on the mechanistic and static models, he necessarily cares for a dynamic approach and ultimately writes as a socially minded economist. Very typical of his train of ideas is, for instance, the often repeated statement that the very life of a modern economy is borne on a stream of ceaseless change. And the author's contention that the government should ensure that everyone has the essentials of decent life and the opportunity to use and develop his or her whole personality (p. 229) comes close to the progressive theory of Social Rent which will eventually enlighten the views of all well meaning contemporary economists.

Boris Ischboldin

Saint Louis University

Industrial Complex Analysis and Regional Development: A Case Study of Refinery-Petrochemical-Synthetic Fiber Complexes and Puerto Rico. By Walter Isard, Eugene W. Schooler, and Thomas Vietorisz. Cambridge, Mass.: Technology Press of Massachusetts Institute of Technology and New York: John Wiley & Sons, 1959. Pp. xvii, 294. $8.75.

In this pioneering undertaking, Walter Isard and his colleagues carry the study of industrial location (as well as the scope in this realm for innovation) into a new area as they go beyond individual industry to industrial complex analysis.

In a very cogent survey at the outset of existing techniques for identifying desirable channels of industrial expansion, the authors point out an analytical gap. In particular, comparative cost studies on the one hand of individual industries may ignore important inter-industry relations; and on the other, input-output analysis (aside from empirical problems) is too broad for some purposes. Thus they argue for the industrial complex as an additional unit of analysis, that is, for "a detailed study of a few strongly interrelated sectors, in which some of the breadth of input-output would be sacrificed for a penetrating and thoroughgoing cost analysis of the sectors selected." And moreover, "the possibility exists that orthodox comparative-cost analysis of each sector individually might indicate negative or inconclusive results ... when analysis of these sectors in com-

bination might yield positive results. Such a situation can arise because of economies of scale and integration, urbanization economies, by-product relations, and other positive agglomeration factors" (p. 26).

The case study (third in the Regional Science Studies series) is not of an existing but of a proposed industrial complex, chosen to maximize the potential economic development of Puerto Rico in terms of the island's economic advantage and disadvantages, etc. The set of complexes examined has four common interrelated processing stages: (1) petroleum refining (using Venezuelan crude oil); (2) primary petrochemical production from refinery and other raw materials; (3) petrochemical production; and (4) final products—synthetic fibers and nitrogeneous fertilizers. To weigh the feasibility of the project as a whole and of the alternative individual complexes the authors carry out a large scale comparative cost and revenue study, but the unit of analysis is the industrial complex, not the individual plant. And the regional or geographical framework consists of comparing Puerto Rico as a site for the entire industrial complex with an optimum Gulf Coast site in the United States for a similar complex. And in the course of the ensuing chapters the utility of the approach is demonstrated for the case of Puerto Rico, for the broader unit of analysis does reveal unexpected combinations of industrial activities for which the island is suited, and at the same time the method brings out the avenues along which it is not.

Industrial complex analysis is a development of major importance which has general significance beyond its path-breaking application to Puerto Rico. In addition to the general reader, the contents of the study are of particular interest to regional economists (and practitioners of regional science in general), to city and regional planners, to operations research departments and business executives concerned with plant location decisions, and to community and state industrial development groups. And the student of economic development will find in the book a challenging and hueristic approach for underdeveloped nations.

Although investigations of this type will differ considerably in scope and detail, *Industrial Complex Analysis* provides an excellent general guide to similar studies. The authors carry the reader in careful detail through the steps from the start in the underlying technology, to the derivation of the inputs and outputs for the individual production activities and their assembly in a basic activity matrix, to the collection of the cost and revenue data, and the economic analysis. And we are told that "a full appraisal and a general formulation of this technique, partly based on this case study, are contained in Walter Isard, et al., *Methods of Regional Analysis*, forthcoming" (p. viii).

JOSEPH AIROV
Emory University

State Income Differentials, 1919–1954. By Frank A. Hanna. Durham, N. C.: Duke University Press, 1959. Pp. xi, 268, $7.50.

Economists, social scientists, and others doing research on per capita income or economic development will welcome this much-needed analytical work on state per capita income differentials. The research, financed jointly by the Rockefeller Foundation and Duke University, covered a span of five years.

The study analyzes the observed state per capita income differences in terms of sets of fundamental elements or forces. The titles of the seven chapters show the book's content. They are: Chapter 1, Introduction and Summary; Chapter 2, Patterns of Differential Change; Chapter 3, Cyclical Behavior of Differentials; Chapter 4, Income Components; Chapter 5, Occupational Earnings; Chapter 6, Industrial Earnings; and Chapter 7, Demographic Factors. There is also a three-part appendix.

Two major sources of data are employed, the National Bureau of Economic Research series for 1919 to 1921, authored by Leven; and the National Income Division, U.S. Department of Commerce, series for 1929–1954, authored primarily by Schwartz and Graham. The 1919 to 1921 per capita series is not strictly comparable to the 1929–1954 series. Dr. Hanna, perhaps for this reason, employs the 1919 to 1921 data in only a few comparisons but is able to conclude that "state ranks for 1919 tend to be the same as the ranks in 1929, 1939, 1949 and 1954." This conclusion is, however, no more astonishing than his summary statement relative to dollar trends in the state differences: "In dollar terms changes in higher-income states have been larger than in the lower-income states," and we might add, apparently since 1945. The appended statement is consistent with the conclusion that relative state per capita income dispersion shows a pronounced narrowing of relative interstate differentials between 1929–1932 and 1945 when the differentials declined from 37 to 47 per cent to 21 to 24 per cent; however, since 1945, relative state differentials have fluctuated around the 21 to 24 per cent level.

Many new concepts of income analysis are introduced and explained. In the appendix, an entire section is given to standardization procedures which should prove highly useful to the growing number of economists becoming interested in economic development. It is disappointing, however,

that such a comprehensive work does not provide a theoretical model to govern the analysis. The study is more descriptive, as Dr. Hanna's stated objective is to analyze observed state differences in terms of sets of universal forces in order to "provide background materials that are needed to interpret, appraise, and provide perspective for the specific and detailed studies of specific areas...."

Those interested in building a statistical model to estimate state per capita income from national per capita income will find the state sensitivity and time factor indexes of great interest. The state sensitivity index shows the percentage change in a state's per capita income that accompanies a one per cent change in national per capita income. The time factor index measures the systematic changes net of the sensitivity index which have occurred in state per capita personal incomes over the period from 1929 to 1954. Analysis with these two factors indicates that about two-thirds of the observed decrease in relative interstate dispersion from 1932–34 to 1952–54 is due to elements associated with the sensitivity index and one-third approximately with the systematic elements due to time. Both factors obviously are synthetic in that each represents a composite of forces. The sensitivity index includes those forces which are narrowing state per capita differences over time, while the time factor index is associated perhaps with growth factors which appear as systematic changes in a state's per capita income over a period of years.

The last three chapters on the effects of occupational composition, industrial earnings, and demographic factors come to grips with the more specific causal factors in state per capita income differentials in contrast with the earlier chapters which are concerned with the more descriptive conditions related to per capita income differences. The author employs rate-constant earnings in an effective and interesting way to isolate the effects of occupational composition and industrial earnings differences. Rate-constant earnings are determined by applying national earnings for each occupational group, or industrial category, to the corresponding experienced labor force in each state. The differences between states' rate-constant earnings provide a measure of the differences in occupational compositions or industrial earnings combinations. Comparisons to the national average show how a state compares to the nation's occupational composition or industrial earnings combination. The results are indicated by the coefficients of determination. The variations between the observed earnings and state rate-constant earnings for 1949 indicate that more than 80 per cent of the variations in earnings level are accounted for by occupational composition. Similar comparisons for industrial earnings, excluding government, show that 70 per cent of the variations between earnings levels of states can be accounted for by industrial earnings combinations. Obviously, these results are mutually exclusive and therefore are overlapping. It would have been highly interesting if the net effects of each factor on state per capita income differentials could have been determined.

The last chapter on demographic analysis investigates only two major demographic factors: city-size and the age distribution of the population. The author determines that city-size is an unsatisfactory factor in accounting for state and regional differences in per capita income because it represents imperfectly a composite of economic and demographic forces. The age distribution factor proves more satisfactory. Differences in state per capita income due to differences in the relative proportion of the population in the age classes under 15 and over 65 in 1950 reduced the interstate relative variations in per capita income 13 to 23 per cent.

Only a few of Dr. Hanna's important findings are presented here. There are many more. He has developed some new methodology; and used accepted methods of per capita income analysis with skill. His appendix on standardization procedures should prove of wide use to scholars and others working in the fields of per capita income analysis and economic development. There are 68 tables of per capita income data. Although many are analytical in the context of particular problems, they will be suggestive. The several tables in the appendix showing per capita income by components for states from 1929 to 1954 will also be of interest and helpful for further research.

JOHN L. FULMER
Georgia Institute of Technology

Forty Years of Foreign Trade. By P. Lamartine Yates. New York: Macmillan Company, 1959. Pp. 255. $9.00.

A mass of data on foreign trade has been available for a long time. But nobody would claim that these data are in a particularly usable state, as far as comparable time series with regard to commodity groups are concerned. True, a good deal has been done to assemble and present such statistics with the League of Nations and the United Nations the major forces at work.

But for the period covering the better part of the twentieth century this handbook is the first attempt to present such statistics in a combination of measurement in terms of value and breakdown as to the commodity composition of world trade.

Within the framework of a detailed tabulation of world trade in 1913 and 1953—partly based on a census taken by the author himself and involving some 90 countries and 60 commodity groups—changes in the composition and direction of commodity trade are measured in this handbook.

The most detailed attention by far is given to trade in primary products. There are, however, chapters reviewing basic data for total world commodity trade and for a juxtaposition of trade in primary products and manufactures. An introductory chapter and an extensive appendix give account of the most important problems of measurement and classification encountered in any attempt to make valid international comparisons. While, obviously, no attempt could be made by the author to reconcile such incompatibilities as those arising from different treatment at the source of statistical data, at least the procedure followed by this handbook is made clear and at least those discrepancies which are the result of statistical processing have been eliminated wherever possible. Even then, of course, different users might have wished for slightly different treatment at times: the U. S. dollar valuation for total world trade may seem less than satisfactory in the light of the relatively low purchasing power of the dollar itself, and some "I.U." à la Colin Clark might have been wished for. Also, for some countries, it is not quite enough to define "special trade" as trade "excluding re-exports from both exports and imports" since this still does not give "net" trade figures, and therefore even with uniform reporting on "special trade" adopted by all countries time and volume discrepancies are still bound to exist.

As for the discrepancies in basic data the author is primarily concerned about the British statistics. But there is enough that could be done to improve the U. S. statistics as well, and the adoption of the conventional c.i.f. valuation of imports is but one of such possible improvements.

Even if the frustration generally caused by attempts to work with international trade statistics is not quite relieved, this handbook goes a long way toward bringing order into chaos. And for wide areas of policy-making the author already provides more and better material than has been available or accessible elsewhere.

H. W. GERHARD

Duke University

The Fiscal System of Venezuela: A Report. By Carl S. Shoup and others. Baltimore: The Johns Hopkins Press, 1959. Pp. xiii, 491. $8.75.

This is the report of the Commission to Study the Fiscal System of Venezuela, a group formed by Professor Shoup at the request of the Minister of Finance. Much of the study takes up problems of tax administration, but the effects of fiscal policy on economic development are not neglected. Many of the recommendations have general applicability to an underdeveloped economy highly dependent on a single export.

In Venezuela's case petroleum accounts for over 90 per cent of the nation's exports and yields two thirds of the federal government's revenue. For a long time Venezuela has followed a policy of "sowing the petroleum," i.e., investing royalties in capital improvements to replace the wealth removed from the ground. Until recently much of the "sowing" took the form of conspicuous expenditures on public buildings and superhighways, which made Caracas an ultra-modern city but did not greatly benefit the rest of the country. Currently, economic planning centers on the diversification of exports and the development of import-substituting industries. The authors recommend greatly increased investment in education, which "pays extraordinarily high rates of return, even in a country like Venezuela where high rates of return are common." Without questioning the reality of social and economic gains from reducing illiteracy and ignorance, one may wonder whether their computations of the monetary value of higher education are not extravagant.

The available data on the distribution of personal income reveal the great inequality that characterizes less developed areas. (With an estimated per capita income of $830, Venezuela is perhaps the least underdeveloped of the Latin nations.) Whether a more steeply progressive tax structure would reduce savings and retard capital formation is not easily answered by statistics. The authors of the report are inclined to believe that fiscal policy could be used to affect some redistribution without impeding continued growth.

ROBERT S. SMITH

Duke University

Pension Funds and Economic Power. By Paul P. Harbrecht. New York: The Twentieth Century Fund, 1959. Pp. 328. $5.00.

The quality of the analysis contained in this study and the importance of the subject justify the widespread attention which the book has received. The study, which is concerned mainly with the impact of pension trusts on the institution of private property, began as a doctoral dissertation at the Columbia University School of Law. Readers familiar with this field will not need to be told that the original inspiration and orientation came from Professor Adolf A. Berle, Jr.

There are a few rather glaring errors. For ex-

ample, on pages 22 and 23, based on figures published by the New York Stock Exchange indicating that on certain dates more than two-thirds of the shares traded belonged to individuals whose income exceeded $10,000 and that approximately 36 per cent of all shareowners earn more than $7,500, there is the statement "we may conclude that something like one-third of all individual shareowners own two-thirds of the outstanding stocks. This argues for more concentration in share ownership than we might otherwise suspect." Not only is the logic faulty but there is clearly revealed a woeful lack of familarity with the conclusions reached by such eminent authorities as Kuznets, Butters and Lampman.

The year 1949 marked the beginning of labor's active interest in providing pension programs. The Inland Steel Case had just established the rule that pension and retirement plans are subject matter for compulsory collective bargaining within the meaning of the Taft-Hartley Act. From then until the end of 1958, the number of employees covered by private pension plans increased from an estimated 6.2 million to 16.5 million.

Federal tax provisions have provided a great stimulus to pension trusts. High corporate taxes coupled with tax reductions for contributions to pension funds permitted the establishment of these programs at relatively low net costs. In addition, although all the income represented by pensions is ultimately subject to taxation, the fact that it is not taxed until the trust actually pays it out works very favorably for the employee.

Pension funds are nearly always in the form of either an insurance contract or an irrevocable pension trust in the hands of a bank. A recent study by the SEC indicates that 58 per cent of the $33.3 billion in private pension and retirement funds in 1957 was in noninsured funds. To a degree, the prevalence of noninsured plans is a result of preferential tax policy. The wider latitude provided by the trusteed plans with regard to investment policy has also been a major contributing factor.

A sound investment policy is of the greatest importance to the success of a pension fund since the ability of a trusteed plan to fulfill its promise rests to a large degree on the prudent conservation of accumulated funds. The most common arrangement is to give the corporate trustee full investment powers in the management of pension funds. The administration of the banking laws and the traditions that have been built up in trustee institutions provide an excellent guarantee that large pension funds will be conserved and invested efficiently and prudently.

In recent years, pension trusts have not only had more to invest, but a larger proportion of their portfolios has been given over to corporate securities. Pension trusts already own about 4.4 per cent of all such securities. Included are almost 11 per cent of the total value of corporate debt issues and 2.3 per cent of the stocks. The ratio of corporate bonds to total assets increased from 45 per cent in 1951 to 54 per cent in 1957. Compared with the traditionally conservative investment policies of fiduciaries, the most striking thing about the current investment of pension fund assets is the high percentage being invested in common stocks.

Father Harbrecht does not always distinguish between book value and market value of portfolios. For example, after pointing out that, based on book value, the ratio of common stocks to total pension trust assets increased from 12 per cent in 1951 to 25 per cent in 1957, he states that some of the larger funds have gone even further and as one illustration indicates that Sears, Roebuck has 76 per cent of its pension trust invested in common stock, with no apparent recognition of the fact that the latter figure is based on market rather than book value (p. 247). Presumably with book value in mind, Father Harbrecht anticipates that by 1965 the pension trusts will have 35–50 per cent of their total assets invested in common stocks. It is interesting to note that the latest figures released by the SEC indicate that based on market value, common stocks represented 39 per cent of total pension fund assets at the close of 1958.

The pension movement has received considerable criticism because of the limited information provided with respect to the specific securities held in the trust portfolios. Such corporations as General Motors and U.S. Steel have answered this criticism by stating that the business of investing funds is highly competitive and that the advantages of employing expert financial skills would be lost if decisions respecting investments were published. From the information that is available, it appears that pension funds concentrate their purchases in a relatively small number of market leaders. The Staff of the Senate Committee on Banking and Currency made a detailed analysis of changes in the institutional holdings of 25 carefully selected stocks during a 34 month period 1953–55 and found that pension funds purchased nearly one-fourth of all their common stocks from this list.

In our society, status and power in the economic and, to a large extent, the social sphere of life derive from the control of productive property. Control over property has gravitated to the managers of the financial institutions because they perform a function which is valuable to society. This function is to provide wide distribution of the wealth which the corporations are creating. The rewards originally assigned to risk capital are now

made available to the man who has little or no capital to risk. Father Harbrecht is intrigued by the idea that capitalism's children, the banks, the insurance companies and the mutual and pension funds are now rapidly socialising the wealth in the great domains of capitalism, the corporations. He is concerned, however, because the basic thinking of employers about pension funds has not yet, as he sees it, grown up to the idea that these assets in fact belong to the employees and that they are, therefore, entitled to some voice in the management of the funds. Unions, he feels, may be criticised for not pressing hard enough for such representation.

RALPH C. HON

Southwestern at Memphis

NOTES

1960 ANNUAL CONFERENCE

The Thirtieth Annual Conference of the Southern Economic Association will be held on November 18–19, 1960, at the Atlanta Biltmore Hotel in Atlanta, Georgia.

APPOINTMENTS, PROMOTIONS AND RESIGNATIONS

Joseph L. Balintfy has been appointed assistant professor of industrial management at Tulane University.

Ernest Benson, assistant professor of business education at Grambling College, is back on campus after a sabbatical leave.

Albert A. Blum has been promoted to associate professor of industrial relations and business administration at American University.

Luther Brock, assistant professor of business communication, is on leave from Southwestern Louisiana Institute to do graduate work at Louisiana State University.

Ronald E. Carrier, formerly of the University of Illinois, has been appointed associate professor of economics at the University of Mississippi.

Adger B. Carroll has been appointed research assistant in agricultural economics at Clemson College.

John Chipman, of the University of Minnesota, was visiting associate professor of economics at Duke University for the spring semester of 1960.

John A. Copps, formerly associate professor and chairman of the Department of Economics, Stetson University, has resigned to accept a position as associate professor of economics at Western Michigan University.

Larry L. Crum, assistant professor of finance, University of Florida, will attend a Forum on Finance in New York during the summer.

Donald Dewey, associate professor of economics at Duke University, has resigned to accept a similar appointment at Columbia University.

John W. Dietz, professor of finance, University of Florida, retired as of June 1960.

Robert R. Dince has been promoted to associate professor of finance in the College of Business Administration, University of Georgia.

John G. Eldridge has been appointed visiting professor of economics at Stetson University. He formerly taught at the University of Florida.

Daniel O. Fletcher, assistant professor of economics at Ohio State University, will teach at Duke University during the summer of 1960.

William C. Flewellen, Jr. was acting dean of the School of Commerce and Business Administration, University of Alabama, for the spring semester 1960.

William M. Fox, associate professor of management, University of Florida, will attend the Seminar on New Trends in Business Administration, sponsored by the Ford Foundation, at Cornell University during August.

Charles B. Franklin, Jr. has been appointed assistant professor of economics at Auburn University, effective September 1960.

Eirik G. Furubotn, formerly at Lafayette College, has been appointed associate professor of economics in the School of Business Administration, Emory University.

S. Paul Garner, dean of the School of Commerce and Business Administration, University of Alabama, was on leave for the spring semester to undertake a special mission for the State Department, observing and advising with higher institutions of learning in several countries of Europe and Asia.

William D. Geer, formerly assistant professor of economics at Stetson University, has accepted a position as associate professor of economics at Howard College.

Spencer R. Gervin has been appointed chairman of Social Studies at Milligan College.

John P. Gill has been appointed professor and head of the Department of Business Statistics in the School of Commerce and Business Administration, University of Alabama.

Donald Glossner, associate professor of business administration at Carson-Newman College, has resigned.

Irving J. Goffman, assistant professor of economics, University of Florida, will spend the summer in Montreal studying tax incidence in Canada under a grant from the Canadian Tax Foundation.

Douglas C. Hague, professor of economics at Sheffield University, England, will be visiting professor at Duke University during 1960–61.

Joseph Willard Holcomb, instructor in business administration at Virginia Polytechnic Institute, has resigned to enter industry.

D. L. Howell has been appointed assistant professor of business administration at Troy State College.

Hans J. Jaksch, formerly of University of Frankfurt/Main, Germany, has been appointed assistant professor of economics at Rice Institute.

Harry L. Johnson, formerly at Louisiana Polytechnic Institute, has been appointed professor of finance in the School of Commerce and Business Administration, University of Alabama.

Laura L. Karadbil has been promoted to assistant professor of accounting at American University.

Beverly Kelley has been appointed instructor of secretarial science at Southwestern Louisiana Institute.

James S. Lanham has resigned as head of the Department of Accounting, University of Florida, effective July 1, 1960.

Edith Nell Lea has been promoted to chief of the Public Information Service of the Southern Regional Office of the U. S. Bureau of Labor Statistics in Atlanta.

Richard I. Leighton has been appointed instructor in economics at Duke University.

Charles W. Lewis has retired as associate professor of marketing at Auburn University.

E. E. Liebhafsky has been promoted to professor of economics at Texas A. and M. College.

C. Arnold Matthews, head of the Department of Finance and Insurance, University of Florida, is a visiting professor at the University of Oregon during the summer.

William L. Miller, Auburn University, will participate in an Economic Seminar to be held at Vanderbilt University this summer.

H. H. Mitchell was appointed professor and head of the Department of Business Administration at Virginia Polytechnic Institute, effective February 1, 1960. He formerly held a similar position at Mississippi State University.

Frederick W. Parkhurst, Jr., chairman of the Department of Economics at Emory and Henry College, has received a Ford Foundation Fellowship in Consumer Economics at the Wharton School of the University of Pennsylvania for the summer of 1960.

Ann Marilyn Phillips has been appointed instructor in the Department of Business Administration at Huntingdon College.

Richard W. Poole has been appointed instructor in economics, Oklahoma State University.

B. U. Ratchford, professor of economics at Duke University, has resigned to accept the position of vice president in charge of research of the Federal Reserve Bank of Richmond, effective August 1, 1960.

Charles E. Ratliff, Jr. has been promoted to professor of economics at Davidson College. He has received a research grant from the Inter-University Committee for Economic Research on the South and will be on sabbatical leave during the academic year 1960-61.

Gaston V. Rimlinger, formerly of Princeton University, has been appointed associate professor of economics at Rice Institute.

Mary Robertson, senior lecturer at the University of Nottingham, England, will teach at Duke University during the summer of 1960.

Samuel M. Rosenblatt has been promoted to assistant professor of economics at Randolph-Macon Woman's College.

Harry Rosenthal has been promoted to associate professor of accounting at American University.

Warren Rose, formerly of the University of North Carolina, has been appointed assistant professor of transportation and public utilities at the University of Tennessee.

R. Otis Russell, formerly of Virginia Polytechnic Institute, has accepted a position as livestock marketing specialist with the Agricultural Extension Service, Auburn University.

Martin C. Schnitzer, instructor of economics, University of Florida, is a visiting lecturer in economics at Missouri State Teachers College during the summer.

Charles D. Smith, assistant professor of economics, University of Florida, is a visiting assistant professor of economics at Cornell University during the summer.

Melvin W. Smith, formerly of Ohio State University, has been appointed marketing specialist with the Agricultural Extension Service, Auburn University.

Carl Stern has been promoted to professor of economics at Randolph-Macon Woman's College.

Robert B. Sweeney has been appointed associate professor of accounting, School of Commerce and Business Administration, University of Alabama.

Kenneth M. Thompson has been appointed associate professor of economics and business administration at the College of William and Mary in Norfolk.

Robert DeWitt Tucker has been appointed associate professor of finance, University of Oklahoma.

Rhea H. West, Jr., formerly at Massachusetts Institute of Technology, was appointed to the staff of the Department of Economics and Business Administration, Carson-Newman College, in the fall of 1960.

George Wilkinson, a recent graduate of the University of Arkansas, has been appointed instructor in economics and business at the College of the Ozarks.

William D. Wilmot, Jr., head of the Department of Management, University of Florida, will attend the Seminar on New Trends in Business Administration, sponsored by the Ford Foundation, at Cornell University during the month of August.

Lowell E. Wilson, who recently completed requirements for a Ph.D. at the University of Illinois, has been appointed assistant agricultural

economist in the Department of Agricultural Economics at Auburn University.

Clyde E. Woodall, assistant agricultural economist at Clemson College, has resigned to accept a position as administrative assistant to the director of the South Carolina Experiment Station at Clemson.

William Wubben, of Pfeiffer College, has been appointed visiting associate professor of economics at Davidson College for the 1960-61 academic year.

Nathaniel A. Wynn, assistant agricultural economist at Clemson College, was on leave during March, April and May for work with the Bureau of the Census.

NEW MEMBERS

The following names have been added to the membership of the Southern Economic Association:

Carl T. Arlt, Federal Reserve Bank of St. Louis, St. Louis, Mo.

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James F. Butler, Louisiana State University, Baton Rouge, La.

Vincent E. Cangelosi, Louisiana State University in New Orleans, New Orleans, La.

John Robert Cooper, College of Charleston, Charleston, S. C.

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Seymour P. Goodman, Tulane University, New Orleans, La.

Vivian Henderson, Fisk University, Nashville, Tenn.

Dewitt Hinds, University of Tennessee, Knoxville, Tenn.

William D. Holloway, 350 Hill Park Drive, Bristol, Va.

Charles W. Hultman, State University of Iowa, Iowa City, Ia.

Lamar B. Jones, Box 12741, University Station, Baton Rouge, La.

Harold H. Kastner, Jr., St. Johns River Junior College, Palatka, Fla.

W. F. Lovejoy, Southern Methodist University, Dallas, Tex.

W. E. Newbolt, Berea College, Berea, Ky.

Warren Pillsbury, 3-A Copely Hill, Charlottesville, Va.

Paul W. Thompson, Duke University, Durham, N. C.

Edgar W. Wood, Box 12656, University Station, Baton Rouge, La.

BOOKS RECEIVED

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